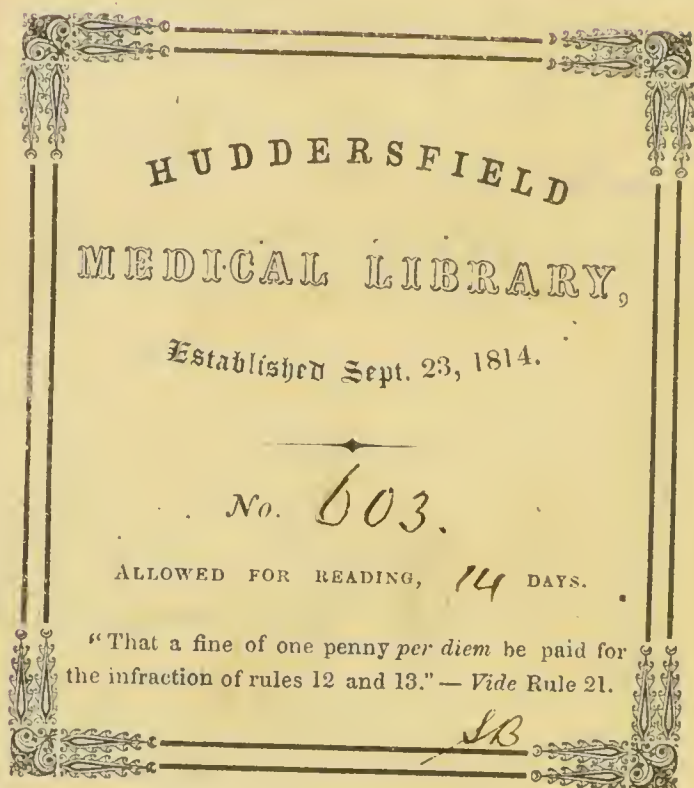


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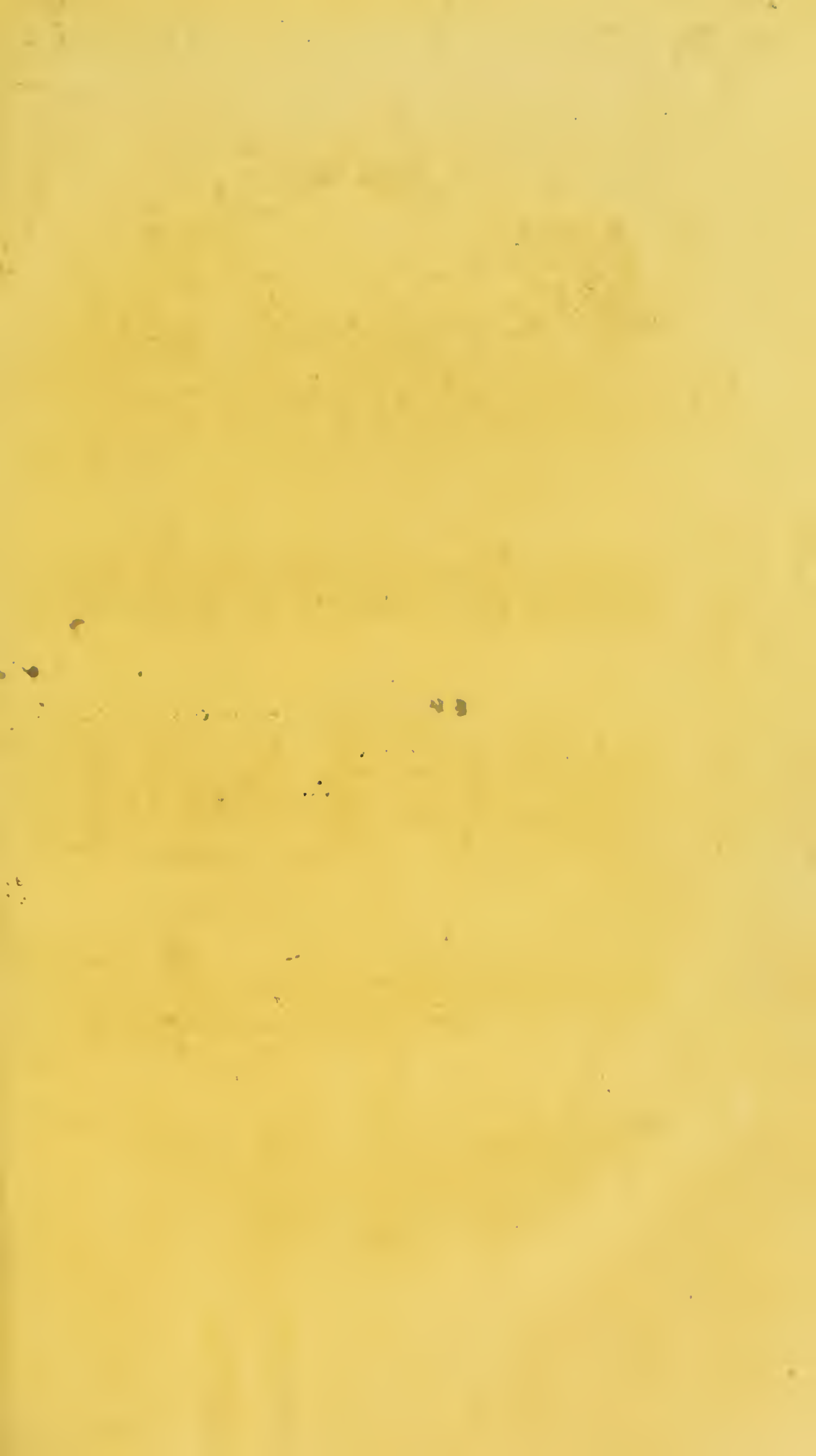


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LECTURES
ON
PULMONARY PHTHISIS,
DELIVERED IN
JERVIS STREET HOSPITAL;
COMPREHENDING THE
PATHOLOGY, DIAGNOSIS, AND TREATMENT OF THE DISEASE,
WITH
AN APPENDIX.

BY JOHN T. EVANS, M. D.,
LICENTIATE OF THE QUEEN'S COLLEGE OF PHYSICIANS, IRELAND,
PHYSICIAN TO JERVIS STREET HOSPITAL, AND TO THE NORTH DUBLIN
INSTITUTION FOR THE DISEASES OF CHILDREN.

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TO
WILLIAM STOKES, M.D., M.R.I.A.,
REGIUS PROFESSOR OF MEDICINE IN THE UNIVERSITY OF
DUBLIN, PHYSICIAN TO THE MEATH HOSPITAL,
MEMBER OF MANY LEARNED SOCIETIES,
AND WHOSE FAME IS CO-EXTENSIVE WITH THE LITERATURE
OF CHEST DISEASES,

This Work is Dedicated,

AS A
TESTIMONY OF ESTEEM AND RESPECT,
BY HIS
FRIEND AND FORMER PUPIL,

JOHN T. EVANS.

ERRATA.

- Page 18, eleventh line from bottom, read *aeration* for *æeration*.
• 22, sixth line from bottom, for *recurring* read *occurring*.
25, seventh line from top, for *trunk* read *track*.
109, eleventh line from top, instead of *or* read *for*.
113, for *Sec. 110* read *Sec. 111*.
133, sixth line from top, for *successful* read *unsuccessful*.

P R E F A C E.

THE following Lectures were delivered at Jervis-street Hospital, during the spring of 1844. With the exception of being somewhat condensed, and being divided into merely three Lectures, instead of several, for the more methodical arrangement of their subject ; they are not altered in any respect. This may explain the introduction of much that is purely elementary, and will excuse a style perhaps too sententious and didactic. They were written for the class of students attending the hospital ; but as they contain some views which I consider (it may be presumptuously) worthy the consideration of my professional brethren, I have ventured, notwithstanding these defects, on their publication.

That a multiplication of books is an evil, has been long acknowledged. If the present work did not contain some things which I believe to be both novel and

useful, it should never have been offered to the public. As the best apology for bringing it before the Profession, I shall in this place cursorily allude to some of the most important and original views discussed in its pages.

Almost all the works hitherto devoted to Pulmonary Consumption, have for their object, the means of detecting the existence of *tubercles*. The presence of these unorganized bodies appears, in the opinion of authors, to constitute the essence of the disease. The locality and nature of this secretion, and the signs whereby it may be diagnosed, have given rise to an immensity of ingenuity and research; whilst the aspirations of pathologists have been nearly entirely directed to some medicinal agent for its removal. The practical result of this system has been, that Physicians, discouraged by repeated disappointments, have almost universally sunk into the persuasion of the utter inefficiency and hopelessness of treatment. Under these circumstances, an examination of this disease, from a different point of view, is at least worthy of consideration. I have attempted this in the following work. I have been led to the belief, that *tubercles*, instead of being the cause, are merely a mode of termination of the disease, and exert little or no influence upon its progress.

No one can deny the vast benefits conferred upon scientific medicine by the study of morbid anatomy. But morbid anatomy is not pathology : and he who would, for the purpose of ascertaining the true nature of the disease,

“ Begin by learning to dissect
“ The lifeless parts he would inspect,
“ Finger and feel them, and call this
“ Experiment, analysis,”

would merely find out the disorganization produced by morbid action, but would remain uninformed as to the causes which produced those alterations. The vital aberration which properly constitutes disease, may or may not give rise to anatomical lesion ; and it is from overlooking this fact, that the nature and symptoms of Phthisical predisposition have hitherto escaped that careful examination to which they are entitled. I have endeavoured to solve the problem of Phthisical predisposition—with what success, the Profession will judge. In pursuing this subject, I have been led to promulgate new views of the nature of Hectic Fever, Emaciation, &c. ; and the more I see of disease, the more am I convinced of the truth and value of the diagnosis of Phthisical diathesis contained in the following pages.

The authors who have hitherto written on Phthisis,

have generally divided the disease into two stages—the first comprehending the period previous to softening; the second, relating to the time after the tubercles have undergone this change. For practical purposes this division is totally insufficient: it affords no clue to treatment; nor is it any guide to prognosis or diagnosis. I have divided the disease into several stages, corresponding to what I believe to be the progress of the lesions; and I have attempted to point out, with the nearest possible approach to accuracy, the signs whereby those stages can be distinguished. The importance of this distinction is becoming every day more apparent to my mind; and I look on it as having been, in many instances, the cause of a fortunate issue to treatment.

I have been led to ascribe several of the ordinary symptoms of Phthisis, especially those of impeded circulation, to the condition of induration, the result, as I believe, of Chronic Pneumonia, which so frequently takes place in the neighbourhood of tubercular masses, or of cavities. Those who may doubt the propriety of my doing so, will do well to consult Andral's seventeenth case in the *Clinique Médicale*, T. 3., which is given in the Appendix to the present volume.

However, the part of the following work which I hope will prove of the greatest utility, is that devoted

to the treatment of the several lesions which present themselves in Phthisis. I have not written lightly on this subject ; but have elaborately and thoughtfully concentrated in it the results of no inconsiderable experience.

I have found it necessary to allude in this work to my former communication with St. John Long. I have done so, hesitatingly and fearful, lest my motives, at that time and at the present, should be misconstrued. The fact, however, is so generally known, that silence might be equally liable to misconstruction. After all, I have no hesitation in saying, that St. John Long was less of a charlatan than many physicians of the present day with an alphabet attached to their names ; and if his patients placed unbounded confidence in his skill, the reason was, because he actually performed many extraordinary cures.

I have found it necessary to differ in many things from the modern Parisian school of stethoscopists. In M. Fournet's book, there appears to me to be many old observations put forward with an imposing air of novelty, and many new assertions destitute of foundation. M. Louis's work on Phthisis (last edition) is of a higher order : admirable on account of its careful pathological descriptions, most useful as a repertory of elaborately-drawn cases ; yet, I must consider its

etiology illogical, its diagnosis rather meagre, and its treatment inadequate.

The form in which the following work originated, precluded the possibility of ascribing every particular fact to its original observer. I wish, in this place, to acknowledge much assistance from Dr. Graves' admirable Lectures on Phthisis. It was also from Dr. Montgomery's observations at the Dublin Pathological Society, I first learned that the uterus was often atrophied in Phthisis ; and from Mr. O'Ferrall, at the same excellent institution, that in mitral-valve disease, the apex of the heart is commonly formed by the right ventricle. To the latter gentleman I also feel called on to express a sense of deep obligation for the kindness with which—previously to my appointment to Jervis-street Hospital—he opened to me the wards of St. Vincent's Hospital for the pursuit of my investigations. If there are any other instances in which I have overlooked the claims of original observers, I beg they will ascribe it to the nature of this work.

34, WESTLAND-ROW,

OCT. 15, 1844.

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LECTURES ON PHTHISIS PULMONALIS.

LECTURE I.

THE GENERAL HISTORY AND PATHOLOGY OF PHTHISIS.

GENTLEMEN,

SEC. 1. The disease to which I shall draw your attention in this and the following lectures, is one remarkable for its frequency, for the obscurity which still invests many details of its history, and for the signal want of success that too generally attends its treatment.

Phthisis Pulmonalis, or as it is usually denominated, Pulmonary Consumption, has from these circumstances attracted great attention on the part of physicians ; and many valuable treatises have been published, throwing light on its pathology and diagnosis. But as I think I can develope to you more accurate means for the diagnosis of its early stages, and more exact directions for its treatment, than have hitherto appeared in

print, I am encouraged to hope that you will find the following course neither supererogatory nor destitute of practical utility.

Sec. 2. There is no disease so common as Phthisis Pulmonalis. In the wards of this hospital, and in the dispensary attached to it, you will meet with numerous examples. It spares neither age nor sex ; the foetus in the womb, the infant at the breast, the youth just arrived at puberty, adults at the time when their greatest energies are called upon for the support and conduct of depending families, the aged, all are liable to its withering influence. The light-haired, blue-eyed, fair-complexioned person, with high hopes and elastic spirits ; the dark, thoughtful, and ambitious man ; the pale, phlegmatic, and indolent ; every variety of temperament, afford equally numerous examples of its consuming power. You will see whole families springing up in pride, joy, and hopefulness—beauty in every form and intelligence on every brow. The elder children, full of confidence and gladness, pass the epoch of puberty ; they are struck down : others follow in the fatal wake, until some one or two, perhaps, remain—dejected—timorous—looking for disease in every blast—for death in every shower—and, it may be, in a few years all have passed away, and the parents alone remain, childless, solitary, and heart-broken. I have seen many such ill-fated families.

Sec. 3. I have said that, even at the present day, there is much obscurity as to the true nature of pulmonary consumption. Some regard it as a kind of

cancer ; others as a species of scrofula ; there are those who look on it as an inflammation ; while some consider it to be a disease of debility. Some think it to be contagious, others non-contagious. In fine, there is scarcely an element in its history about which differences of opinion do not exist, even amongst the most eminent physicians.

Sec. 4. As regards the curability of Phthisis, great uncertainty still continues in the profession, the greater number of medical men considering it a disease necessarily fatal, while some of the greatest physicians have thought it curable, even after the formation of large cavities, and the destruction of a considerable portion of the lungs. Now, if we were to permit ourselves to reason a priori, we should be led to deny the existence of any incurable disease ; except that process of induration and concentration which leads to the consummation of natural death in extreme old age, be considered as such. For disease never arises of itself in the living organism ; it is always the effect of the influence of external agents ; and if a disease be produced by the agency of certain external causes operating in one direction, it is rational to believe it may be removed by subjecting the system to the influence of causes acting in the opposite direction. And this manner of reasoning would lead us to believe, that when in any instance, we find a disease rebellious to our mode of treatment, it is because we are ignorant of the true nature of the disease ; and from not knowing the *route* which the causes pursue in its production, we

either neglect the proper method of opposing them, or from want of enlightened confidence, fail to persist sufficiently boldly and perseveringly in its employment. But I will not insist on this mode of viewing the subject. Medicine is eminently an inductive science, and one well authenticated and undoubted case in which Pulmonary Consumption has been cured, is worth folios of reasoning to prove that it is curable.

It is because, therefore, of the sad frequency of this disease, and that having from peculiar circumstances been led to study it with more than ordinary attention, I think I can afford you more enlightened views of its true nature, and of the best mode of treating it, that I am induced at this time to bring it before your consideration.

Sec. 5. Phthisis Pulmonalis presents itself to us in practice under many different forms ; we will take a rapid view of the principal of these varieties. A common case met with is that of a young person, different members of whose family have died of decline, but who has hitherto enjoyed tolerably good health. The form of the thorax is commonly high, but contracted both in its lateral and antero-posterior diameters ; the breathing and pulse generally more hurried than what is usual. This person in time gets a short, dry, tickling cough ; loses flesh ; the breathing becomes more hurried ; after a little while, expectoration follows the cough, and streaks of blood occasionally appear in the sputa ; the pulse increases in frequency ; considerable dyspnœa comes on. Once or twice in the day, fits of

chilliness are felt ; towards morning the head and chest perspire very much ; the wasting becomes extreme ; the voice altered ; the extremities of the fingers enlarged ; loss of appetite, thirst, diarrhœa, all continue to exhaust the strength ; the expectoration becomes profuse, purulent, and curdy ; and at length the worn-out patient expires, most usually in a sudden manner.

Or an individual may have been always ailing and delicate ; never exactly sick, nor ever robust and healthful ; the breathing difficult upon exertion ; constantly liable to catarrh ; yet looking fat and florid, and considered by his friends more of a hypochondriac than a valetudinarian. At length a new bronchitis comes on, similar in its character to those that have preceded it, but very different in its results ; rapid emaciation, extreme dyspnœa, violent hectic, demonstrate how profound is the disease that has seized upon a vital organ, and in a brief period he becomes a confirmed consumptive. In other instances, you will see persons past the meridian of life, who have suffered during the greater part of their lives from severe winter coughs, with great oppression and much expectoration ; but who during intervals of comparative relief are strong and vigorous, capable of considerable exertion in the pursuit of business, and apparently destined for a long course of activity and usefulness. Suddenly, during one of their periodical attacks of catarrh, the voice becomes permanently altered ; they lose flesh rapidly ; diarrhœa sets in ; and they sink into an enfee-

bled condition, a true decline, which sooner or later leads to a fatal termination.

Again, you will meet with robust and well-developed youths, with broad shoulders and full chests, the very representatives of strength and activity, who had never by experience known what sickness was, until a certain period, generally a short time after puberty, that a sensation of painful heat and constriction becomes perceived in the thorax, copious spitting of frothy florid blood comes on. This may be removed by treatment, but it returns again, the patients the meanwhile wonderfully preserving their *embonpoint* and colour, until at length the strength suddenly gives way ; then follow rapid emaciation, hectic, and the rest of the miserable catalogue. Sometimes the disease commences with severe pain in the larynx, hoarseness, stridor in the breathing, perhaps complete aphonia ; and these symptoms may continue for months or years before the symptoms proper to phthisis pulmonalis develop themselves. Sometimes you will find, in females, violent paroxysms of hysteria, constituting the first link in the chain of disease ; at other times, violent cramps in various parts of the body, as in the stomach, or even in the calf of the leg, mark the *debut* of phthisis. A variety of the disease occasionally presents itself which cannot be called phthisis—for in it there is no wasting—but which is closely related to pulmonary consumption by its anatomical characters. This state arises, sometimes, during convalescence after long and depressing fevers, and is marked by extreme dyspnœa,

turgidity of the face, coldness of the extremities ; and these symptoms end in absolute asphyxia.

Sec. 6. Now, in all these cases there is one common anatomical lesion to be found after death, and that is, the presence in the lungs of small whitish bodies of a cheesy consistence, to which pathologists have given the name of tubercles. These tubercles originally become deposited in minute dots, in certain situations ; and these dots increasing in number and approaching each other, unite to form larger masses ; the masses, according to their size, are called miliary tubercles when about that of a grain of mustard seed ; when larger, are named crude tubercles ; very rarely they are contained in cysts ; sometimes the tubercular matter, in a condition of less consistence, is found infiltrated through the tissue. The chemical composition of tubercles, according to Dr. Brett, is identical with the fibrin of the blood, mixed with some salts. It is, in fact, coagulable lymph, in a solid form, and more or less granular in its structure, from the method in which the masses are deposited. After a variable length of residence in the tissues, it is apt to become softened, when by this softening it is by the same authority converted into a matter identical with pus, through which flakes of the unsoftened tubercular matter continue to float. Many observers have ascertained that lymph can be converted into pus, so that it would appear that tubercle is an intermediate stage in the transformation. Tubercular matter may be deposited in all the tissues, and even upon the surfaces ; thus it

is found in the abdomen, in the lymphatic glands, in the cellular tissue, between the layers of the mesentery, in the follicles of the intestines, in false membranes, on the surface of the peritoneum, or even coating the surface of the latter membrane. It is found in the substance of the muscles and of the brain. It has even been discovered, in little grains and in a pul-taceous form in the large air-cells of the vesicular lungs of the turtle ; moreover, no trace of organiza-tion has ever been ascertained in it.

In pulmonary phthisis, the tubercular deposit is most frequently found in the upper lobes of the lungs ; sometimes the whole lung is equally studded through-out ; on other occasions it commences in the middle lobes, and very rarely in the lower lobes. The left lung appears to be somewhat more frequently the seat of the disease than the right ; most commonly these bodies are discoverable in both lungs. The presence of tubercle is very commonly not confined to the lungs in this disease ; these deposits likewise frequently exist in the intestines, the mesentery, liver, spleen, kidneys, arachnoid, &c. ; and this general diffusion of tubercle is found oftenest in phthisical infants.

Sec. 7. The state of the parts surrounding the tuber-cular deposit in the lungs is very variable ; very rarely they are found perfectly healthy ; most commonly lesions of some kind are discoverable ; when the tubercles are scanty and miliary, the most common thing is to find the mucous membrane lining the bronchial tubes swollen, and of a bright red colour ; this may be

confined to the lobe in which the tubercles are found, or may be a general condition throughout the lungs ; in other instances when the miliary tubercles are numerous, we find the lungs red, heavy, still crepitating, and capable of floating in water, but evidently much engorged throughout their substance : sometimes there are found little black masses, like minute spleens, imbedded in the lungy substance, in some of which, small tubercular specks can be perceived, and in this case the sputa contained in the bronchi is generally bloody ; again there are observable small solid masses through the otherwise healthy and crepitating lungs, sometimes red and fleshy, at others hard, greyish, and granular, in which are occasionally found small tubercles. When the tubercles are large and crude, the surrounding substance of the lungs is for the most part, indurated of a blackish, or greyish colour ; when the tubercular matter has become softened, we find that portion of lungs in contact with it ulcerated, suppurating, forming an abscess which may communicate by fistula, with any neighbouring surface, most usually the interior of a bronchial tube.

Now all these conditions of the tissues in the neighbourhood of the tubercular deposits, are, it is important to observe, such as we might expect from an active congestion, and its consequences ; swelling and vascularity of the parenchyma and mucous membrane, either general or confined to a lobe, or to isolated lobules ; bloody exudation, chronic indurations, ulceration and suppuration ; all belong to this category.

Sec. 8. Andral has well shown that the presence of the tubercle cannot be considered as the cause of this congestion: In cases where lobular pneumonias existed in great numbers through the lungs, some of the inflamed lobules contained tubercles and others not; it was the same when several small pulmonary apoplexies existed. It must have been the same cause in these cases, that produced all the separate inflammations or extravasations, but the cause could not have been the presence of tubercles, for these were not universally demonstrable.

On the other hand, every case of phthisis pulmonalis commences with bronchitis, active hemoptysis or pneumonia; so that we are led to believe that tubercle is universally produced by active congestion. This corresponds with what is observed whenever a new secretion or a new physiological action is about to take place in any organ; when phosphate of lime is about being deposited for the first time in the conversion of cartilage into bone, red blood-vessels spring up, where they never before existed; when the lymph shed into serous cavities is about to become organized, the presence of red blood-vessels is the first evidence of plastic energy; and no negative argument can be drawn from the rare observation of tubercles without neighbouring inflammation, for we do not know the state of the parts, at the time they were originally deposited.

Sec. 9. But inflammation does not always produce the deposition of tubercular matter. How frequently do pneumonias the most extensive become resolved;

catarrhs the most severe, either disappear or degenerate into a chronic form without a trace of tubercle remaining behind ; whilst a few inflamed lobules, or a bronchitis so slight, as scarcely to attract attention, shall develop the seeds of decay and death. It is plain, that there must be some thing peculiar in the conditions which cause an inflammation to terminate in the secretion of tubercles, instead of ending in resolution or suppuration ; we may, therefore, admit that a *predisposition* must exist in those cases, where inflammation produces tuberculization.

Sec. 10. Hereditary constitution, the prolonged exposure to cold and moisture, the continued deprivation of light, deficient and unwholesome food, those have been commonly admitted amongst the causes that favour the peculiar predisposition in which tubercular inflammation is apt to occur. Of hereditary constitution we know nothing more, than that the children of the consumptive are especially liable to become phthisical. Exposure to cold has been shewn by Edwards to produce very different effects, according to the length of its continuance and according to the original constitution of the individual ; a long application to a well developed person increases the respiration, the circulation, and the power of generating heat ; exposure to cold for a short period diminishes the energy of these functions, and this diminution is still more effected by repeated renewals of transitory exposure ; on the feebly developed, exposure to cold, under any circumstances, produces these latter influences in a

still more remarkable degree. Now it is to be remembered, that the functions of respiration and circulation, and the power of generating heat, bear a direct relation to growth, and the capacity of resisting external agencies ; so that frequent renewals of transitory exposure to cold, to the strong—and its application, under any circumstances, to the feeble—must have the effect of retarding their development, and rendering them more susceptible to decay. But according to the same eminent physiologist, moist cold, still more remarkably produces the same results. He found that moisture of itself, had a positive influence in diminishing the exercise of the vital functions. Apart from the influence of circulation and respiration, animals were found to die more rapidly in water than in air ; and the conclusion appears inevitable from his experiments, that the application of moisture is calculated to diminish life. Want of light is another cause which arrests development ; in the subterranean waters of Carniola is found the *Proteus anguiformis*, an animal intermediate between the frog and tadpole ; and Mr. Edwards produced an exactly analogous being, a half developed frog, by excluding a tadpole during its growth from the influence of light. Deficient and innutritious aliments are calculated in a similar manner to check growth and hasten decomposition, so that all the causes to which a phthisical predisposition is commonly attributed are found to be alike in their physiological action ; they are all capable of arresting the vigorous development of the system, of diminishing the force by

means of which, each tissue attracts from the circulating fluid the material of its growth ; and of increasing the facility with which external agents operate its dissolution.

Sec. 11. I believe there are other causes which produce the predisposition to phthisis besides those enumerated, but which act in a similar manner. It is notorious that the disease called "Chlorosis," is very apt to lead to consumption ; so are also excessive hemorrhages from different organs, as well as excessive secretions, such as leucorrhœa diarrhœa and diabetes, calculated to exhaust the strength. It is not difficult to understand why chlorosis or the anemic condition resulting from considerable hemorrhage should predispose to this disease ; in these cases the globules of the blood are diminished in quantity ; these globules are especially, as regards their function, the oxygen carriers ; the oxygen conveyed by them has a double use in the organism, it unites with the products resulting from the decomposition of the tissues, forming the different secretions ; but it moreover acts as a stimulant to the tissues, increasing their force of growth, and the vital attraction existing between their molecules ; deficiency in the number of the blood globules, must have the effect, therefore, of more or less arresting the process of nutrition, and thus of generating that condition of the system which appears to be most favourable for the development of tubercle.

Sec. 12. It often happens in young people as well as in the progress of old catarrhs, that the first sympto-

matic or physical evidences of tubercle occur subsequently to profuse and frequent hemoptyses ; from what has been said, is it not reasonable to believe that the hemoptysis in these cases has produced the predisposition to tubercular deposition, and that it may be looked on rather as the cause of tubercle, than as a symptom of its present existence.

Sec. 13. From a careful consideration of the causes which tend to predispose to the development of tubercle, I think you are justified in coming to the conclusion that this predisposition consists in a deficiency of that manifestation of vital force whereby the tissues are enabled to grow at the expense of the circulating fluid. This deficiency may be congenital, or it may be the result of external circumstances ; it may be confined to an organ, or it may implicate the whole system. But we are led by strict induction to believe that when this predisposition exists, the slightest local inflammation is liable to terminate in that peculiar variety of fibrinous secretion intermediate between lymph and pus, to which has been given the name of tubercle.

Sec. 14. Comparative anatomy and embryology prove that the development of muscular tissue is the product of an action of growth, of a higher order than that which gives rise to cellular and nervous tissues, it consequently follows that in a general arrest of development in the organism, the muscular tissue should suffer first, and in the causes which tend to produce atrophy, this tissue should first present a deficiency of

nutrition. Therefore it is, that in the predisposition to tubercle, we find a want of proportion between the red and white tissues, the latter are present in excess, and it has been supposed that an excessive development of the white tissues predisposed to tubercle. But from what we have seen you can evidently understand that it is not an hypertrophy of the white tissues, which constitutes the predisposition ; but that the same causes that predispose to tubercle, produce likewise atrophy of the red tissues.

Sec. 15. You may perceive how well the locality which tubercle generally occupies, corresponds with the two-fold method of its production, we might be led by pure calculation to conclude that the lungs of all organs in the body ought to be most liable to inflammatory affections, subject as they are to every atmospheric change, and kept in never ceasing activity ; and then, on the other hand, the upper lobes of the lungs are those in which nutrition is least active, and the left side, again, is in all the higher animals the least developed. If arrest of growth be the remote, and inflammation the immediate cause of tubercularization, we have in inflammation of the upper lobe, especially of the left lung, during a state of original or induced debility, all the conditions in a marked manner, necessary for its production. The following outline of a case which I well remember having occurred in the practice of a medical friend of mine, from having made a deep impression on my mind, being but a *beginner* at the time, will sufficiently exemplify the

circumstances under which tubercles arise. A lady, soon after her confinement with her first child, was attacked with symptoms of a gastro enteritis ; in addition to thirst, anorexia, tenderness on pressure in the epigastrium, constipation alternating with diarrhœa, &c. ; she had a distinct rigor daily, and perspired profusely every night. As she had some cough, and presented the above symptoms, together with much emaciation, her case was originally mistaken by the practitioner who had first seen her for one of phthisis pulmonalis, and she was subjected to a treatment undoubtedly inappropriate, under all circumstances, but especially when we reflect on her actual disease ; she was dosed with muriated tincture of iron, in order to check the perspiration. Her chest having been examined by an experienced stethoscopist, it was ascertained that she had no sign whatever of tubercalization in the lungs. The tonics were now discontinued, and means employed to check the gastro enteritis. They were to a certain extent successful, and from the instant she stopped the preparation of iron, it is remarkable that the rigors ceased ; but, observe the condition to which she had been reduced : she was emaciated to an extreme degree, and had total loss of appetite. By a slight imprudence she caught cold while in this state, and very soon after, the fatal *râle* of tuberculization was heard under the spine of the left scapula. I need not delay now to explain how an ill-treated gastritis is equivalent to a deficiency of nourishment, in producing the pre-disposition ; or how a slight bronchitis, dur-

ing the existence of this pre-disposition, is sufficient to provoke tubercular deposition. I would merely endeavour to impress on you, from the circumstances of such a case as this, the necessity in every instance, of guarded prognosis ; for no doubt the ignorant, reasoning from the result would, in such circumstances, conclude that the stethoscopist was in error, and that the original attendant had made the true diagnosis.

Sec. 16. If the pre-disposition exists, inflammation of any organ may give rise to the development of tubercles. Thus, in badly nourished children a gastro enteritis may produce the disease called *tabes mesenterica*, a true *phthisis abdominalis*. In the adult the same effect may occur. Thus you will see, among the poor, a mother scarcely recovered from her confinement, and subject to the debilitating process of suckling, without nutritious food, working constantly in some cold, comfortless apartment, day after day ; she gets from some cause a sub-acute inflammation of the intestinal mucous surface, when her abdomen swells, becomes exceedingly tender, fluctuating, and dull on percussion ; and at length she sinks and dies. You will find the peritoneum containing a semi-purulent fluid, and it, as well as the mucous membrane, the liver, the kidneys, the spleen, studded with innumerable tubercles ; while none, or at most a few scattered miliary ones can be detected in the lungs. There is no reason why tubercles should occur more frequently in the lungs than in any other part, when the conditions of their formation may be present, except

that these organs are more constantly in action, and more exposed to external agency.

Sec 17. Are tubercles in the lungs the cause of Phthisis Pulmonalis? I think not. When abscess of the lungs results from partial pneumonia, we do not look on the pus which it contains as the cause of the disease: tubercle is only a solid form of pus, and the same reasoning may apply to both these modifications of lymphic exudation.

Sec. 18. None of the symptoms of Phthisis depend upon the presence of tubercle. I shall proceed to examine those symptoms, seriatim, for the purpose of ascertaining their cause. I shall draw your attention to them in the following order:—1st, emaciation; 2nd, hæmoptysis; 3rd, hectic fever; 4th, gastro-enteric symptoms; 5th, cough and alteration of the voice; 6th, uterine symptoms; 7th, symptoms of impeded circulation.

Sec. 19. The emaciation in phthisis has been ascribed to two very opposite causes; viz., deficient æration and excessive æration of the blood. The greater number of physiologists ascribe the emaciation that occurs in this disease to the first of these causes. They imagine that the presence in the lungs of accumulated tubercles interferes with the absorption of oxygen and the elimination of carbon, and that the blood is consequently imperfectly arterialized. They look on this process of arterialization as necessary for rendering the blood fit for the purpose of nutrition—that, in other words, it constitutes the last stage in the for-

mation of perfect blood, and that if it be interfered with a greater or less arrest of nutrition must be the result. Now, this hypothesis is subordinate to the doctrine, that the blood of animals is gradually formed in their organism ; that hæmato genesis consists in a succession of processes by which the blood is step by step elaborated. But the researches of modern chemists have demonstrated that this is not the fact—that, on the contrary, the blood is furnished to animals ready formed, and that after its absorption from the alimentary canal, it has no further change to undergo, but is at once fit for nourishing the tissues. In fact, the oxygen absorbed during the process of respiration is not for the purpose of forming blood, but for decomposing it, and reducing it to its original elements. The reason why an adult animal never increases in size is, that the tissues, growing at the expense of the circulating fluid, become as rapidly decomposed by the oxygen which that fluid holds dissolved ; and thus, as Cuvier said, animal nutrition is a constant vortex of renewal and decay. The oxygen absorbed in respiration does not tend to increase growth but to lessen it ; and, therefore, if accumulated tubercles in the lungs diminish the absorption of oxygen, the effect ought to be, that phthisical patients should increase in size ; their organs ought to become hypertrophied instead of atrophied.

The opposite hypothesis is, that Phthisis is a disease of hyper oxidation, that the emaciation depends on the excess of oxygen in the system, causing an excess

of waste—a kind of combustion of the tissues, by which they decompose faster than they grow. But the supporters of this doctrine allege, that this waste of the tissues, dependent upon the union of their elements with oxygen, is the source of animal heat ; that the temperature of the body bears a direct relation with the rapidity of this combustion. Now, it results from the observations of Andral that the temperature of consumptive patients is below the mean ; so that, according to the premises, excess of waste or hyper-oxydation cannot be the cause of emaciation in the phthisical. This hypothesis was first broached by Dr. Beddoes, and has since been supported with great ingenuity by Liebig. These philosophers, however, might have been led to doubt the correctness of their views, from the observation, that the emaciation increases according as disease interferes with æration, the contrary to what ought to take place if their doctrine were correct.

We have already seen that the pre-disposition to Phthisis consists in a diminution of the force of growth—of that vital attraction whereby the tissues draw from the circulating fluid the materials of their nutrition. It is not difficult to understand, that a diminished power of growing is equivalent to an excess of waste, in producing atrophy of the tissues. If this view be correct, emaciation is one of the essential elements of the disease. It is not the result of tubercle, but is produced by the causes which predispose to tubercle ; and if this be true, we should be led to expect

that not unfrequently a general atrophy should precede any local evidence of the deposition of this secretion.

Sec. 20. Hæmoptysis occurs under three circumstances in Phthisis. In a person previously healthy, or it may be labouring under Chronic Catarrh, profuse and frequent attacks of hæmoptysis may come on, ushering in the symptoms of rapid decline ; or in the course of the disease there may be occasional bloody expectoration ; or the disease may terminate fatally by a hæmorrhage produced by the rupture of a large vessel adjoining a cavity—a termination which is, however, very rare. I have already given reasons for believing that the first kind of hæmoptysis is often the cause of Phthisis, both by the debility it produces and the congestion on which it depends : the second variety of hæmoptysis is produced by occasional active congestions, which take place in the progress of the disease. But it is evident that none of these hæmorrhages, with the exception of the last variety, can be looked on as the direct result of the presence of tubercles. Lænnec ascertained, long since, that the vessels in the neighbourhood of tubercular cavities were generally obliterated—a circumstance that accounts for the rarity of hæmorrhage from rupture.

Sec. 21. The day has not long passed since the combination of symptoms to which the name of hectic fever has been given was considered, in every instance, to be produced by suppuration and absorption of pus. The fact, that the instant a phlegmon begins to convert itself into an abscess is the signal for a rigor to occur,

followed by perspiration, and that a succession of these feverish paroxysms usually accompanies the progress of the suppuration under such circumstances, appeared to favour the hypothesis. It is to Broussais that we owe the true analysis of hectic fever under such circumstances. He demonstrated, by irresistible arguments that hectic was a fever symptomatic of local irritation in a debilitated state of the general system ; that suppuration, like every other normal secretion, was preceded and accompanied by irritation in the part ; and that this irritation like any other, was apt to repeat itself in distant organs ; but that the suppuration itself, like every other secretion from a part, tended by its depleting action to lessen that local irritation, and thus, instead of being the cause of hectic, was calculated rather to diminish it. No doubt, an abscess, by its pressure on neighbouring fascia, for example, will produce much pain and inflammation, accompanied by high fever ; and there appears reason to believe that the fluid parts of pus, in a particular state, are sometimes absorbed, and produce in the system symptoms of a peculiar poisoning. But these phenomena must be excluded from the consideration of hectic fever, which thus, in many instances, becomes reduced to a form of pyrexia, recurring in a cachectic state, and symptomatic of local irritation. This view of the nature of hectic acquires great force from the observation of its symptoms, as they arise during *Phthisis Pulmonalis*. You will find hectic fever present in the earliest stages, before any suppuration has

taken place. You will find the daily chill, the copious morning perspiration, the rapid pulse ; all these symptoms abating in the most marked manner subsequent to an hæmoptysis, or aggravated, on the contrary, by constipation, by the internal use of stimulants, by all those causes that are calculated to increase irritation. You will frequently see the application of a few leeches even during suppuration, to diminish in a remarkable manner the hectic, at the same time that it increases the suppuration. Now all the arguments that shew the want of dependence of hectic fever upon suppuration are applicable with equal propriety to its connection with tubercle. We have seen that tubercle is only a variety of pus—that irritation accompanies tuberculization as well as suppuration ; so that we are justified in ascribing, to a certain extent, the hectic of Phthisis Pulmonalis in a similar manner to local inflammatory action ; and, therefore, we conclude, that its presence is independent of the existence of tubercular deposits. But a more exact observation of this disease will shew us, that hectic fever is not produced by a single cause. No doubt, as Broussais has shown, it is often symptomatic of local inflammation ; but, on the other hand, all the phenomena of hectic may present themselves, when there is neither suppuration, tuberculization, inflammation, nor any other local lesion. In these cases the fever is evidently essential, depending on a particular state of the whole system. In a word, on the phthisical pre-disposition, for the recognition of which, when we come to speak of its

diagnosis, we will find it to afford one of the most valuable means.

Sec. 22. The laryngeal symptoms of Phthisis Pulmonalis are very variable ; they all, however, resolve themselves into cough, alteration of the voice, modification of laryngeal respiration, and local inflammatory phenomena, such as pain and tenderness. In the early stages of Phthisis, there is usually only a short dry cough, some slight alteration in the tone of the voice ; at this time these symptoms appear to depend on an irritation purely sympathetic. A great degree of sympathy certainly exists between the extremities of the air passages. Inflammation of the larynx often produces Pneumonia. Inflammation of the lung frequently produces, not only cough, but remarkable alteration of the voice. The voice in Pneumonia has sometimes a distinctly metallic character. The sympathetic irritation of the larynx in Phthisis, long continued and aggravated by other causes, may end in organic disease ; or in other instances a chronic laryngitis excites a similar sympathetic irritation in the minute tubes, and gives rise to tubercles. But it is the local irritation that operates in either case, and there is no evidence whatever, that tubercles confined to the lungs and without other pulmonary lesions, are capable of giving rise to laryngeal symptoms.

Sec. 23. The intestinal affections that occur in Phthisis of any great importance, may be divided into those that precede the pulmonary symptoms and those

that accompany them ; thus it will be occasionally found that obstinate diarrhœa, may exist for some time before cough, or before any other evidence of chest disease presents itself, and it is by no means uncommon to find a continued anorexia, the first symptom in this disease. In autopsies we occasionally perceive considerable tuberculization of the intestinal trunk, while very few miliary tubercles are contained in the lungs. But most commonly we simply discover a dotted or reticulated vascular injection ; perhaps a few oval whitish follicles with the circumference and center dark grey from vascularity ; and it may be some abraded and suppurating patches. When the symptoms of intestinal irritation precede for a long period those of pulmonary disease, it may well be questioned in what way are they connected. It seems reasonable, that in some instances the intestinal disease may be the cause of Phthisis, not by directly causing the production of tubercles in the lungs, but by giving origin to that state of predisposition which may be considered as the matrix of tuberculization. I cannot conceive any cause better calculated to diminish the force of growth than a diseased condition of the intestinal mucous surface ; and you may remember that it is in this diminished force of growth, that the predisposition to Phthisis consists. On the other hand, amongst the sympathetic irritations that constitute hectic, not the least remarkable is that of the intestinal canal ; this sometimes displays itself in a diminished, at others in an increased appetite ; sometimes in constipation, at

others in diarrhœa. In the same way as irritation of the larynx may end in organic disease, so may the intestinal ; lastly, intestinal symptoms may be a result of obstruction to the portal circulation. But you will perceive that the tubercles in the lungs are not the causes of these enterital symptoms, but are on the contrary effects in common.

Sec. 24. Various uterine symptoms present themselves in Phthisis ; thus the different forms of amenorrhœa, as well as menorrhagia and uterine leucorrhœa, are by no means rare complications of this disease. In the same way as laryngeal and intestinal affections may sometimes be the causes, sometimes the effects of Phthisis, so is it with the alterations of uterine functions. Excessive discharges from the uterine surface, whether of menstrual secretion or leucorrhœal flux, diminish in a remarkable degree the blood globules, exhaust the strength, and are peculiarly calculated to produce the tubercular cachexia. On the other hand, an uterine irritation may be sympathetic of the pulmonary inflammation that gives rise to, and accompanies tubercle, and this secondary irritation according to its degree may produce excessive secretions of a normal or morbid character, or it may be complete suppression. Amenorrhœa no doubt occurs in Phthisis from a cause the opposite to irritation, namely from a deficient nutritive energy, and it is no uncommon thing to find the womb in a state of advanced atrophy in this disease.

Sec. 25. The last class of symptoms I shall draw

your attention to are those of impeded circulation. Andral has shewn that in extensive tubercular solidification, the right cavities of the heart are often so much dilated, that the right ventricle constitutes the apex of this organ, and it is an observation as old as Aritœus, that in this disease the extremities of the fingers and toes become enlarged and the nails curved. A similar condition of the heart occurs in mitral valve disease and frequently in extensive emphysema, and in the same diseases as well as in Cyanosis the clubbed condition of the fingers may commonly be perceived. It is much more probable that the obstructive cause which produces these effects in Phthisis, is the extensive induration that so generally exists around the tubercular masses, rather than the presence of these tubercular masses themselves.

Sec. 26. You perceive, then, that after the most careful examination of the different symptoms which ordinarily accompany tubercular Phthisis, there is not one which can be attributed to the presence of the tubercles themselves. On the contrary, you find all these symptoms resulting from the very causes that produce tubercles ; thus the deficient force of growth gives rise to emaciation and hectic fever ; local active congestion causes *directly* hæmoptysis ; and by its *remote sympathies* hectic fever, laryngeal, enteric and uterine symptoms. You perceive that as far as the history of a case of Phthisis Pulmonalis is concerned, if diminished nutrition and local irritation be present, tubercular depositions may be subtracted

without producing the slightest influence on its progress. The secretion of tubercles is one of the effects of certain diseased conditions ; but it is not the tubercles that constitute the disease ; emaciation, pulmonary inflammation, with the termination of ulceration and suppuration, and the local and general symptoms these produce, this is the *ensemble* that constitutes Phthisis Pulmonalis, and the presence of tubercle in the lung without these does not constitute it. In the rare cases where tubercles have been found, without traces of surrounding inflammation, there were no symptoms during life.

Sec. 27. You may likewise have observed, that what are commonly the symptoms of Phthisis, may under certain circumstances produce the disease. Thus emaciation predisposes to tubercle ; in an individual predisposed, an irritation secondary to laryngitis may immediately cause its deposition ; gastritis by diminishing the amount of nutriment, hæmoptysis, menorrhagia, &c., by diminishing the blood globules, tend to promote the diathesis.

Sec. 28. We have seen that tubercles have been sometimes, although very rarely discovered, without appreciable evidences of surrounding lesion. This fact seems to be a clue to the solution of an important problem in the pathology of Phthisis. It may be argued that although all the symptoms of Phthisis, proceed from the existence of a pulmonary inflammation occurring in a cachetic constitution, yet that the tubercles are the cause of this inflammation, and thus

not the less, (although indirectly) they produce the symptoms; it may be supposed that small solid masses of tubercle imbedded in the substance of the organs act as foreign bodies, and excite inflammation and suppuration in the surrounding tissues; but every reasoning of this kind is met by the fact that tubercles are sometimes found, where the neighbouring parts present no evidence of inflammatory action; nothing similar to this occurs when foreign bodies are projected into the organs; then the neighbouring parts either suppurate, or the foreign body becomes surrounded with a cyst. In purulent and bloody exudations, this healthy state of the adjacent tissues is sometimes seen; and therefore we conclude that blood and pus do not act as foreign bodies in the parts where they are exuded, and the same reasoning applies to tubercle. Tubercle therefore does not excite inflammation.

Sec. 29. We are led by the foregoing considerations to the following conclusions:—

1st. That Phthisis Pulmonalis is a disease characterized by a deficient force of growth, together with symptoms both local and general of active pulmonary congestion.

2nd. That the preponderance of the white tissues in this disease is due to a diminished force of growth, whereby the tissues generally, but the red in particular, are rendered incapable of attracting from the blood their normal quantity of aliment, and by which their power of resisting the decomposing influences of external agencies is diminished.

3rd. That the diminution of the force of growth depends upon abstraction of natural stimuli and aliment; for example, want of heat, air, light, oxygen in the blood, &c., and the food being insufficient and innutritious.

4th. That the active pulmonary congestion depends upon the application of stimuli too violent and too prolonged, and may display itself either in the form of bronchitis, hæmoptysis, or pneumonia.

5th. That the symptoms of the active pulmonary congestion in this case, are hectic fever, hæmoptysis, catarrh, cough, altered voice, together with derangement of the digestive and uterine functions.

6th. That the pathological appearances of the active pulmonary congestion are those of bronchitis, pulmonary apoplexy, or of pneumonia, in the stage of engorgement.

7th. That the same causes which produce the symptoms of phthisis, are likewise apt to produce the secretion of what is called tubercle, an albuminous substance, intermediate between coagulable lymph and pus.

8th. That the parts of organs that have secreted tubercle, are subsequently disposed to ulcerate and suppurate, and the tubercle, at the same time, to soften in part, into a fluid similar to pus.

9th. That abscesses formed by the softening of tubercles, and the ulceration and suppuration of surrounding parts, are subject to the ordinary laws of abscess—viz.: burrowing to, and bursting from, the

surface, presenting the least resistance, following the least organized track in their fistulous course, cicatrising by the means of a lining membrane, &c.*

10th. That masses of tubercles and tubercular cavities, are generally surrounded with indurated lungy substance, of a black, yellowish, or greyish colour.

11th. That in proportion to the amount of this induration, will be the signs of impeded circulation, namely, dilatation of the right cavities of the heart, and enlargement of the extremities of the fingers.

12th. That the existence of tubercles is not signalized by symptoms, nor their absence a cause of amelioration in disease.

13th. That the presence of tubercles never causes inflammation in the surrounding tissues.

14th. That the state of emaciation being a direct consequence of diminished force of growth; and this latter being the predisposing cause of Phthisis, we ought to expect emaciation, or something analogous to it, to precede in general the local signs of Phthisis.

15th. That the lesions in Phthisis most important to be kept in mind, are the deficient force of nutrition, and the local pulmonary irritation; and that the symptoms of this disease, namely, the emaciation, hæmoptysis, hectic fever, cough, alteration of voice, loss of appetite, thirst, constipation, diarrhœa, ame-

* A distinction has been made, on the ground that tubercular abscesses secrete, but do not absorb. I am not aware of any sufficient foundation for this opinion.

norrhœa, menorrhagia, leucorrhœa, enlargement of the extremities of the fingers, &c., are all, more or less, the consequences of these lesions.

Sec. 16. That hæmoptysis, when very profuse, may be the cause of the diminished growth, and pulmonary irritation of Phthisis.

17th. That sub-acute gastritis may predispose to Phthisis.

18th. That excessive discharges, such as diarrhœa, menorrhagia, leucorrhœa, &c., may produce diminished force of growth, and thus predispose to Phthisis.

19th. That suppression of menstruation, in a person predisposed, may produce active pulmonary congestion, and thus give rise to Phthisis.

I have been anxious to impress upon your minds the essential lesions in which Phthisis consists, because I feel convinced that the tendency of the present day is to magnify the importance of tubercle in the history of Phthisis ; while, actually, the presence of tubercle constitutes a lesion of very minor importance, and this fact will become still more evident to you when we come to speak of the diagnosis and treatment of this disease.

LECTURE II.

THE DIAGNOSIS OF PHTHISIS PULMONALIS.

SEC. 30. If, as I hope, you have by this time formed correct notions of the pathology of Phthisis, this knowledge will much facilitate the study of the best means of diagnosing the disease. Too frequently is this diagnosis considered as the death-warrant of the unhappy patient ; yet, if it be true that Pulmonary Consumption, when once developed, is intractable to medicinal agency, it is questionable whether the positive determination of its presence, sealing, as it would in that case, the destiny of the victim, be worth the delicate and laborious education of the senses requisite on the part of the physician for its attainment, when the only object gained as regards the patient would be the confirmation of his despair. But let us hope better things from our researches—that, forming a more accurate idea of the nature of Phthisis, and training ourselves for its exact diagnosis under all circumstances and in each of its stages, we may be in many instances enabled radically to remove it, and at least in all cases to alleviate its symptoms and prolong life.

SEC. 31. You may recollect my having mentioned, that the principal lesions in this disease necessary to

be borne in mind are, the diminished force of growth—constituting its pre-disposition—and the local pulmonary irritation—the immediate cause of the greater number of its symptoms ; I will endeavour to point out to you the means whereby you may be enabled to ascertain the existence of such lesions.

Sec. 32. Diminished force of growth may produce two classes of effects apparently very different from each other ; namely, loss of flesh, and increase of fat. These phenomena are not, however, so irreconcilable with each other as they at first appear. Atrophy of the tissues occurs whenever the waste by decomposition exceeds the vital attraction of new molecules, either by an increase of the waste by hyper-oxydation, or a diminution of the supply from deficient force of growth. We have seen that the latter is the cause of emaciation in Phthisis, and that it affects the red tissues more than the white. The waste of the tissues, which may be considered as remaining unchanged in this case, gives rise to the different secretions. Some of these secretions are thrown off from the system, others are retained. Amongst the latter is fat, which, if the oxydation be deficient, may remain in the system, but, if enough of oxygen be supplied this will also burn away, forming carbonic acid and water. You are aware that sedentary habits, by diminishing respiration, promote the deposition of fat, whilst exercise, by increasing the respiratory process, causes its disappearance from the system ; so that, you perceive, there is nothing contradictory in there being at one and the

same time a wasting of the muscles and an increase of fat—the first proceeds from a deficient force of growth ; the second from too small a supply of oxygen.

It appears, then, that deficient force of growth may display itself either in muscular debility with emaciation, or in muscular debility with increased *enbon-point*.

Sec. 33. Liebig has rendered it probable that waste of tissues is the source of mechanical power in animals, and that the nerves of involuntary motion are better conductors of force than those of voluntary motion. If these premises be true, we ought to expect increased involuntary motion during excessive waste ; in other words, emaciation ought to produce frequent pulse and hurried respiration. This is the way he accounts for the fever that is usually found to accompany emaciation. But there is an objection to this reasoning, as applied to phthisis : we have already arrived at the conclusion, that the atrophy of the tissues in this disease does not depend on increase of waste, but on diminished growth. It is true, without doubt, that fever frequently does accompany the emaciation that pre-disposes to pulmonary consumption ; but, even if we admit that an increased waste of the tissues may give rise to fever, there is no such exaltation of waste in this disease, and, therefore, the fever in this instance does not admit of such an explanation.

We must, therefore, have recourse to another hypothesis. We have seen that the atrophy of tissues in

Phthisis commences in the red, and that this produces a preponderance of the white tissues. The muscular tissue wasting more rapidly than the nervous or cellular, causes an excess of the latter. We should, expect therefore, as the result of emaciation, a more marked display of nervous and cellular function, than of muscular ; and such is found by experience to be the case. It may, indeed, be taken as a general rule, that muscular and nervous manifestations are in an inverse ratio to each other. The athlete, who can perform feats of prodigious strength, is usually possessed of but little sensibility. As regards the intellectual part of nervous function, we find the Hercules and Sampsons of antiquity were the gigantic slaves of wilier minds ; and in reference to the operations of sense, we see such persons coarse and unsusceptible, regardless of pain, because feeling little, and although possessed of indomitable energy, sluggish and difficult to arouse. In sickness we know that a certain amount of fever is in them, an evidence of most serious local lesion, because their sympathies are so difficult to excite ; and every thing proclaims, that in proportion to their muscular development is the feebleness of nervous manifestation.

In relation to persons of an opposite temperament, the words delicate and nervous are commonly employed as synonymous expressions. When the muscles are weak and feeble, the sensibility is generally extreme. Women are for the most part more susceptible of pain and more readily receive the impressions of stimuli, than men ; and the causes that are calculated to ar-

rest growth, increase this sensibility. The application of a single leech has been known to produce tetanus in a person exhausted previously by excessive hæmorrhage. We may infer, therefore, that emaciation from any cause is calculated to increase nervous excitability.

But the processes of circulation and respiration are eminently excitomotary phenomena. It results from the discovery of Dr. Marshall Hall, that natural stimuli produce involuntary motions, for the most part by the impressions they produce being carried to the nervous centres by the nerves of sensation, and reflected back to the muscles organised for their performance through the nerves of motion. When you irritate a sphincter, it is in proportion to the facility with which this circuit of conduction can be performed that it is enabled to contract, and the lungs and heart are in this respect somewhat similarly circumstanced. The inspired air stimulates the pulmonary mucous membrane; the in-drawn blood stimulates the serous lining of the heart's ventricles; but it is in proportion to the susceptibility and integrity of the nerves with which they are supplied, that these organs are enabled to execute their proper functions. Let the facility of communication by the nerves be increased, and the activity of these organs will follow in a similar ratio.

We have seen that in emaciation the muscular tissue suffers most, and the nerves acquire not an actual, but a proportional development. The manifestation of the functions of their tissues follow the same rule; the

nervous sensibility becomes exalted, as the muscles become debilitated. The motion of the lungs and heart bear a direct relation with the facility of communication by the nerves, and it follows that these motions will be performed with greater rapidity according as the nervous function becomes more active. The frequency of the pulse will be increased, and the respiration become more hurried, according to the haste with which emaciation progresses ; and we can find no difficulty, according to this hypothesis, in understanding why a diminished force of growth should be frequently accompanied by fever.

Sec. 34. But this fever so excited is calculated to increase the amount of emaciation. The respiration becoming hurried, and the circulation more rapid, a greater quantity of oxygen is carried to the tissues, and this, combining with their elements, hastens their decomposition ; so that the fever resulting from deficient growth is adapted to increase waste.

Sec. 35. Should emaciation from deficient nutrition remain unaccompanied by fever, increased deposition of fat may be expected ; for the static attraction between the living molecules, which, under normal circumstances, resists external agencies, is in this case diminished ; whilst at the same time, from the absence of fever, there is not an adequate supply of oxygen to burn completely away the products of decomposition. Now, these are precisely the circumstances which produce an increased deposition of fat.

We may, therefore, conclude, that a diminution in

the force of growth is disposed most usually to generate fever, and in that case, from the abundant supply of oxygen, excessive leanness must necessarily result. But if fever be not developed, then the deficient nutrition of the tissues, will be accompanied by an increasing *embonpoint*.

Sec. 36. We are by this train of reasoning led to the following expression of the law which governs the phthisical diathesis—a law which, at the same time that it is perfectly in accordance with theory, strictly agrees with experience :—If an individual is observed to become weak and debilitated in the performance of voluntary motions—no matter whether the change takes place rapidly or slowly—and if this deterioration of strength be accompanied by an evident increase of fat, such an individual is in a condition of pre-disposition to Phthisical disease. Again, if an individual be perceived to emaciate sensibly, and if at the same time the pulse be frequent and the respiration hurried, without any evidence of local disease existing whereby these feverish symptoms may be accounted for, this person is equally in a state wherein the slightest irritation occurring in the lungs will suffice to originate Pulmonary Consumption.

Sec. 37. Having ascertained the principles which may guide us in the diagnosis of Phthisical pre-disposition, let us now turn our attention to the study of the means whereby we may learn the existence of irritation or its consequences in any portion of the pulmonary structure ; and I shall divide this investiga-

tion into the following branches. We shall first examine the means of diagnosing pulmonary irritation; from thence we shall proceed to study the effects of induration of the lungy substance; afterwards, the signs of ulceration, fistulæ, and cavities, shall each in turn occupy our attention.

Sec. 38. Let me remind you in what it is that irritation of any tissue consists. Irritation is the name that is applied to the morbidly increased irritability of a part. Irritability is a property which naturally belongs to living molecules; it is the attribute of living tissues, whereby their molecules attract each other with a force greater than that of cohesion, and by which the tissues are enabled to perceive the contact of stimulating agents. An irritating substance or stimulus is so called, because when brought into contact with the living organs it increases their irritability. The tissues become more dense from the increased force with which their molecules attract each other, and their perceptibility of stimuli is increased; when a too violent or too prolonged stimulus is applied to a tissue, its irritability becomes for a considerable time morbidly increased, and this is the state which is called irritation.

Irritability is present wherever there is life. It belongs to vegetables as well as animals, and there is no living part which is devoid of it; so irritation may exist in every tissue and in every being possessed of vitality.

When, in consequence of the too violent and too much prolonged application of a stimulus, any part of

an animal becomes irritated, this irritation first manifests itself among the solid constituents of the tissues ; the living molecules approach each other, and the capillary vessels consequently diminish in their calibre, and the blood flows through them with increased rapidity. But the vital attraction of irritability not only operates between the solid constituents of the tissues, but also between the latter and the blood which they contain. The fixed and immoveable flesh attracts the flowing flesh, as Bourdon calls it, and thus it is that the circulation is maintained, as Dr. Houston has shewn, in acardiac animals. In virtue of the irritability of each organ, it is enabled to draw towards itself the nourishing juice, and when the irritability of a part becomes increased, this suction power becomes increased in an equal ratio. A tissue is not long in a state of irritation, therefore, before its vessels are forced to dilate to admit the blood attracted towards it, and the presence of this accumulation of blood in the part gives rise, according to its organization, to swelling, redness, heat, and pain. New lesions are thus added to the original irritation, and the disease acquires a new name ; it is now called acute inflammation, Sthenic Hyperemia, or Phlogosis, according to the prejudices or opinions of authors.

Sec. 39. In a pathological point of view, the essential difference between irritation and inflammation consists in the diminished quantity of blood which is present in the former, and the increased quantity of blood in the latter. Other and accidental differences depend on this

essential one. Thus, in the former the tissue is dense and contracted, in the latter it is swollen ; in the former the colour is pale, in the latter ruddy ; in the former secretion is diminished, and if it be a surface it is dry ; in the latter secretion is increased. As far as the meaning of irritation is a morbidly increased irritability, this is a condition common to both lesions. But you will recollect, that when I speak of a stage of irritation, I mean that state in which the tissues are firmer and more dense than natural, more susceptible of stimulation, containing less blood, and deficient in their secretions ; while I mean by acute inflammation, a state wherein the part is also more susceptible of stimulation, but swollen with blood, and secreting in an increased proportion.

Sec. 40. Now, how are we to ascertain the existence of pulmonary irritation ? In doing this it is necessary to consider separately irritation of the air-cells and parenchyma of the lungs, from irritation of the bronchial tubes ; the signs of the lesion are different in these two cases.

Sec. 41. I believe the evidence of irritation of the air-cells and parenchyma to consist in an exaggeration of the normal respiratory murmur—what Laennec called “ puerile respiration.” Hitherto, exaggerated respiration has been almost universally considered purely supplementary—that is, when one portion of lung was rendered impervious to air from any cause, another portion took an increased respiratory action ; that, consequently, puerile respiration was not a sign of

disease in the part in which it existed, but in some other part. Dr. Stokes is the only physician who has hitherto considered puerile respiration to be a direct sign of disease. He very judiciously considers irritation to constitute the first stage in Pneumonia, and he regards puerile respiration as its sign. Now, I firmly believe in the truth of this observation, and the following facts strongly corroborate it. If you trace the progress of Pneumonia, you will find, just external to the margin of the signs of actual inflammation, an exaggerated character of respiration to precede the spreading of the disease. Again, in capillary bronchitis, where you might suppose the air-cells to be in a state of irritation from the vicinity of the existing inflammation, you find the respiration puerile. In the hurried respiration arising from sympathetic irritation in fever, this exaggerated state of respiration also exists. And there is no doubt that in many persons pre-disposed to Phthisis, a puerile respiration, either general or localized in the situation where tubercles subsequently develop themselves, is frequently for a long period the only sign you can discover. Fournet states, that during the resolution of Pneumonia puerile respiration commonly follows the contraction of the inflammation ; that the crepitus redux is followed by an exaggerated respiration ; I have always found the contrary to be the case ; that the part of the lung in which bronchial respiration, and subsequently the crepitus of resolution, had existed, remains for some time little resonant, and the respiration muffled ; and that this is

the case is confirmed by the pathological condition of the part, which remains in a kind of passive congestion, requiring stimulants and tonics for its removal. On the contrary, you will find enormous solidification of the lungs, or extreme compression of one lung by liquid in the pleura, without the respiration being any where exaggerated, provided there be no pulmonary irritation ; while a slight pneumonia or a dry pleurisy, during the acute stage, will often produce an action decidedly puerile in the unaffected lung.

Sec. 42. M. Fournet's description of exaggerated respiration does not accord with what my senses convey to me. He says, that in exaggerated respiration, the duration and intensity of both the inspiratory and expiratory murmurs are increased, but especially the expiratory. Now, this is not what I hear. On the contrary, it seems to me, that in proportion as the inspiratory sound becomes louder and longer, the expiratory becomes more faint ; and this is what theory would lead us to expect, for the ordinary feebleness of the expiratory murmur is due to the imperfect conducting power of the lungs, and to the fact that the air in producing it is passing away from our ear instead of approaching it—at rest, in place of being in motion ; and these conditions of the feebleness of the sound are increased during puerile respiration.

Sec. 43. In the fever that accompanies rapid emaciation, we have already recognised increased nervous energy. This fever especially consists in an extreme frequency of pulse and hurried respiration. In such

cases you will frequently find the respiration generally puerile throughout the thorax ; but this puerility does not depend on pulmonary irritation, but on nervous excitement. *An universally exaggerated respiratory murmur*, accompanied by frequent pulse and emaciation, denotes, therefore, a pre-disposition to pulmonary consumption, but not the present existence of pulmonary irritation.

If we find, however, a localized puerility in the respiration, without evidence of disease existing elsewhere in the lungs, to which it may be supplementary, this constitutes a strong evidence of pulmonary irritation. You are not to infer that actual inflammation does not exist, because lobules of the irritated parenchyma may have passed into the state of hyperœmia without your being able to detect it. Indeed such is usually the case, and exaggerated respiration is often our only sign of lobular pneumonia. But this is a sign not depending upon the hyperœmia, but upon the irritation. *Inflammation* of the lung has its proper signs—but circumscribed exaggerated respiration is for the most part the sign of parenchymatous *irritation*.

Sec. 44. If localized puerility exists in the upper lobes, and is accompanied by the evidences of Phthisical pre-disposition, your diagnosis is reduced to a still simpler analysis. When emaciation and fever exist, however, to any considerable extent, we lose the value of puerility as a sign ; because, as we have already seen, the exaggeration is universal. But when the proofs of Phthisical pre-disposition consist in increas-

ing muscular debility, accompanied by increasing embonpoint, puerile respiration, especially if circumscribed, becomes a sign of fearful import.

Sec. 45. I have said that the signs of pulmonary irritation are divisible into those of irritation of the parenchyma and of the bronchial tubes. I shall now, therefore, endeavour to show you how you may recognise bronchial irritation. When irritation of the lining membrane of the minute bronchial tubes exists, the inspiratory murmur becomes shortened in duration. The intensity of this murmur is not diminished ; on the contrary, I think it is somewhat increased ; but when compared with the opposite side, it is heard to terminate more quickly and abruptly—the expiratory murmur, according to my experience, remains unaltered ; compared with the short, loud inspiration, it certainly seems to be lengthened ; but when examined in reference to the expiratory murmur in the opposite lung, you cannot find any difference between them. The sign of bronchial irritation is, therefore, a sensible diminution in the duration of the inspiratory murmur.

Sec. 46. M. Fournet supposes this diminution in the duration of the inspiratory murmur, to depend on obstruction to the entrance of air, from deposition of tubercle or some other cause : I do not believe that this is the reason of it. At the time, when in Phthisis, diminished duration of inspiratory murmur first occurs, we have not the slightest evidence of tubercle being present ; no doubt that obstruction to the entrance of air will shorten the inspiration, but what proof is

there of any obstruction existing in this case ? I look on the shortening of the inspiration as depending on the increased perceptivity of stimulus, which is a necessary part of the irritation of the bronchial mucous membrane ; just for the same reason as the pulse becomes quick under the use of an excitant, so does the bronchial tube contract with a short sudden jerk when in a state of irritation. In the one case the blood is the natural stimulus, in the other the air ; but when the excitability of either organ is increased, the contact of the natural stimulus is more quickly felt, and the function is more suddenly called into play. I regard, therefore, the contact of the inspired air with the irritated mucous membrane, as the cause of the shortening of inspiration ; it is an involuntary effort made by the irritated membrane, to repel that which is injurious to it.

Sec. 47. Well, then, we have arrived at these results ; that the sign of pulmonary parenchymatous irritation, is localized puerility of respiration which is not supplementary ; and that the sign of pulmonary bronchial irritation, is diminution of the length of the inspiratory murmur.

Sec. 48. It is very probable that in the majority of cases, there is both bronchial and parenchymatous irritation ; but in such circumstances the sign of bronchial irritation would alone present itself, the mucous membrane first perceiving the contact of the air. If, however, we imagine the efforts made by the lung to produce both these effects to be equal, we

would then in fact, have no evidence of disease at all ; for in exaggerated respiration, the inspiration is prolonged, in bronchial irritation it is shortened, so that the two phenomena would exactly neutralize each other. If we suppose the exertion to perform puerile respiration, to extend the struggle made by the bronchi against the entrance of air, we would then have respiration performed by several distinct jerks, which might be either few, distinct and audible, constituting what is called an interrupted, or *entre coupée* respiration ; or very numerous and indistinct, the dry crackling *ronchus* of Fournet.

Sec. 49. But there is a phenomenon which occasionally occurs in bronchial irritation, and sometimes, even where no pulmonary disease is present—which it is necessary for me to notice in this place, inasmuch as its presence might lead you to think that disease had advanced farther than what it actually had—in simple irritation of the bronchial tubes, you will sometimes hear, for a limited time, sounds like the cooing of a dove, or the chirping of young sparrows ; those are what are called the sonorous and sibilous rales. Now these sounds were formerly supposed to depend on small clots of mucus adhering to the mucous membrane and partly obstructing the bronchial tubes. When this occurred in the larger tubes, a grave sound was produced called the sonorous rale ; when in the small tubes, an acute tone called the sibilous rale. No doubt, this explanation is in a great many instances correct ; but afterwards it was observed that in bronchitis these grave

and acute tones preceded the stage of secretion ; and it was then ascertained, that a mere swelling of the mucous membrane taking place, especially at the bifurcations of the bronchi, converted the tubes into reed instruments, and was thus capable of originating these sounds. Dr. Aldridge has lately pointed out another source of these rales. He found, in hysterical paroxysms, when the attention of the patient is particularly drawn to the chest, that dry bronchial rales, both acute and grave, may frequently be heard, in great intensity, throughout the chest ; and in a case of fever which was under my care in this hospital, and in which, from the presence of these rales, and the apparent oppression of the respiration, bronchitis was apprehended as the most imminent complication, he pointed out to me that there were no moist rales whatever to be heard—that the inspiratory effort was performed with a short, sucking action, while the expiratory was very much prolonged, and that the mouth was contracted into a whistling form while the cheeks were drawn in ; and in conclusion he remarked—“if you treat that man’s head you will cure the bronchitis ;” which advice being followed, the result proved its value. He also tells me he has found a similar form of respiration in the acute stage of hydrocephalus, which has once or twice led him, at the commencement, to imagine the chest the part affected. Now, in these cases I think we can only explain the production of these musical tones in the lungs by the supposition of spasms occurring in the bronchial tubes. This I know, that in the stage of

what I have been led to believe, from other evidence, pure bronchial irritation, when inflammation had not as yet set in, I have frequently heard these sounds, and this has especially been the case in incipient Phthisis ; and I can well understand, that in those cases where excessive emaciation is accompanied by fever, and consequently great nervous excitability, that the occurrence of irritation would be a very likely means to produce bronchial spasm, especially if the patient be of an hysterical constitution.

Sec. 50. Why is the pulmonary irritation in Phthisis generally localized ? We cannot answer this question, although one of great interest in the present state of science. Our inability to answer, however, on the doctrine that irritation is the immediate cause of tubercle, must not be taken as an admission that it is explicable on the hypothesis that the tubercle is the cause of irritation ; for on the latter hypothesis the locality of the tubercle would remain to be explained. In a position such as this, the certainty of ignorance is a species of knowledge.

Sec. 51. We have seen that rapid emaciation without local lesion is sufficient to give rise to fever. But the existence of local irritation is a still more decided cause of hectic. In this case you may expect not only the hurried respiration and frequent pulse, but also distinct attacks of rigor, followed by perspiration ; cough and alteration of voice, gastro enterite, and uterine symptoms, demonstrate that secondary irritations have seized on the larynx, digestive tube, and uterus.

Other sympathetic phenomena may also arise, so that already you may perceive all the ordinary symptoms of consumption, while as yet not a single tubercle has become deposited in the pulmonary substance.

Sec. 52. Having thus pointed out the means of diagnosing the existence of irritation in the parenchyma and air-tubes of the lungs, permit me now to turn your attention to the characters by which you may be able to recognize when the stage of irritation has been turned into that of inflammation. You know that when irritation has existed for a certain variable period, it causes a flow of blood towards the situation that it occupies, and the part becomes swollen, hot, red, and painful, according to the nature of its organization. All these effects do not invariably occur; if the part be scantily supplied with sentient nerves, little or no pain or tenderness may be present, although the inflammation may be most intense. Another consequence of the sanguineous turgescence is an increase of secretion, which may be either the normal secretion of the organ, or a new and diseased one. Bearing these general facts in mind, let us now proceed to study the signs whereby we may be enabled to ascertain the existence of inflammation in the lungs.

Sec. 53. This inflammation may be situated either in the bronchial tubes, the air-cells and parenchyma, or in the pleura. I have not spoken hitherto of the means of discovering irritation of this latter membrane. It is, indeed, very difficult to be detected; for although from what I have said of the general pathology of irri-

tation, you might expect that the serous membrane should become dry when irritated, and this dryness of adjoining surfaces in motion, must necessarily produce a rubbing sound ; yet it is very difficult, if not impossible, to distinguish this “*frottement*,” as it is called, from what is produced by the rubbing of the same surfaces covered by a lymph exudation.

Sec. 54. Inflammation of the pleura can in general be easily enough recognized. An acute pain, commonly called a stitch, seizes the part, and renders the motions of the adjoining ribs so painful, as seriously to interfere with the mechanical phenomena of respiration. At the same time a secretion commences to be poured out into the cavity of the membrane, which may be either the whole liquor sanguinis—that is, the serum of the blood, holding the fibrine in solution, or the fibrine solely. In the first case it is called pleurisy with effusion ; in the second, dry pleurisy. In either case the fibrine rapidly coagulates, forming a layer upon the inflamed surface, which may be absorbed or organized into a cellular tissue ; the opposite surfaces of the pleura may become in time adherent to each other ; if serum be thrown out, as in pleurisy with effusion, it will be absorbed after a variable period. From this hasty sketch of the pathology, you will be enabled to understand the signs of the disease. Thus, if there be a copious effusion of serum, separating the lung from the side, percussion of this bag of liquid will yield a dull sound. If you apply the ear to the same situation, you will be unable to hear the respiratory

murmur. If you put the patient into different positions, the liquid necessarily gravitating to the most dependent part of the bag of the pleura, the level of its dulness will alter. The bag of liquid will also press upon surrounding organs, and push them aside ; thus, if it be on the left side, the heart will be driven over to the right ; if it be on the right, the liver will be driven down. By these means and others similar to them, you will be enabled to diagnose liquid effusion into the pleura. If the secretion thrown out be simply fibrine, whether solely, or previously to serous effusion, or after the absorption of the latter, you need not necessarily have dulness on percussion. You may continue to hear, to a certain extent, the respiratory murmur. You will not have any displacement of neighbouring viscera, but you will have the rubbing of the neighbouring pleural surfaces rendered rough by the adhering fibrine, and this *frottement* it is which is the diagnostic sign of dry pleurisy.

Sec. 55. Although Phthisis not unfrequently follows in the wake of pleurisy with effusion, this disease very seldom complicates the progress of consumption. It is more frequently dry pleurisy that occurs in this disease, and so common is it, that you seldom have tubercular masses near the surface of the lungs that you do not also find the contiguous pleural surfaces adherent. It is difficult, however, to detect the existence of these partial and fleeting inflammations during life ; for flying pains about the chest, in this disease, proceed from so many causes—slight neuralgias, in-

tercostal rheumatisms, partial periostites, &c.—that you cannot draw any positive conclusion, in many instances, from their presence : and frottement is frequently impossible to be detected, being disguised by the preponderance of parenchymatous and bronchial signs in the same situation. Very well marked frottement, also, when it occurs in Phthisis, is more frequently the evidence of numerous minute tubercles elevating the surface of the pleura, and rendering it rough, than of dry pleurisy, properly so called. In cases, however, where there are evident signs of tubercular deposition in the summit of one lung, the commencement of disease in the top of the other is sometimes indicated by frottement and stitch in the lower part of that side.

Sec. 56. Suppurative inflammation of the air-cells and parenchyma most frequently commences in the lower lobes of the lungs ; when these parts become inflamed, there is but little pain felt, because they are but sparingly supplied with nerves of sensation. The air-cells and very minute bronchi pour out at first a serous secretion, but afterwards all the elements of the blood become secreted into their cavities, and the fibrine coagulating, the air-cells are found distended with solid blood. The physical signs depend upon these anatomical conditions : at first the serous secretion is heard frothing during inspiration, by admixture with the inspired air—the sound thus produced is called crepitous rale ; afterwards, when fibrine is thrown out, and the lung, from its coagulation, is rendered

solid, percussion produces a dull sound. You can no longer hear the respiratory murmur, for the air cannot enter into the cells, already filled with coagula; but the lung, by its solidification, becoming a better conductor of sound, you now hear the air blowing backwards and forwards through the large tubes, as it passes to and from the portion of lung that still continues pervious; this is called bronchial respiration. When pneumonia attacks the upper lobes the same phenomena present themselves.

Sec. 57. But in Phthisis, inflammation of the air-cells and parenchyma does not offer these signs. On the contrary, if called in to a person previously healthy, you find on examination a distinct pneumonic crepitus, or well marked bronchial respiration, under the clavicle or above the spine of the scapula, the chances are that tubercle will not in this case be developed. The fact is that the pathology of parenchymatous inflammation occurring in predisposition to Phthisis is different. It is not serum or unaltered liquor sanguinis that is secreted, but tubercles, and this not in masses infiltrating whole lobules or lobes, but in numerous isolated points. The signs of this form of inflammation are, therefore, as peculiar as the morbid anatomy.

Sec. 58. Comparative dulness on percussion, feebleness of respiration, the inspiration short from the obstruction to the entrance of the air, the expiration louder and longer from the lung becoming a better conductor of sound, an exceedingly minute crepitus,

scarcely audible except upon a forced inspiration, the respiration gradually acquiring a rough, hard, tubular character, at first appearing in the expiration ; these are the signs by which you are enabled to recognise the supervention of inflammation in the air cells and parenchyma, when it occurs during the phthisical diathesis.

Sec. 59. The signs of inflammation of the bronchial tubes, in Phthisis, are essentially the same as the ordinary characters of simple catarrh. The inspiration is diminished in duration and intensity ; the expiratory murmur, when compared with the opposite side, is found to remain unchanged ; sibilous and sonorous rales present themselves with different degrees of intensity ; a mucous rattle is frequently heard, and the resonance on percussion is slightly diminished. When the bronchitis is general, no diagnosis as regards the formation of tubercles, can be drawn from these signs, except by taking into account the evidence of phthisical predisposition. Nor in that case can any diminished resonance be perceived, if bronchitis alone be present ; because you cannot avail yourself of comparison. Under such circumstances if dulness on percussion should occur in the summit of the lungs, it is an evidence that the parenchyma in that situation has become engaged. When, however, the bronchitic signs are localized in the summit of one or both lungs, you have great reason to fear tubercular deposition.

Sec. 60. I need scarcely say, that these inflammations of different tissues may co-exist : nor is it neces-

sary for me to point out the means by which you may recognize their combination.

Sec. 61. It is in this stage that miliary tubercles usually commence their deposition. From the peculiar character of the pneumonia and the localization of the bronchitis, you may have strong reasons for suspecting their presence, especially if phthisical predisposition be well marked ; yet you may perceive, that you have not even here any positive signs of their existence.

Sec. 62. The morbidly increased irritability still continuing during the stage of inflammation, repeats itself by sympathy in distant organs. You thus have cough and laryngeal symptoms ; thirst, anorexia, and other digestive symptoms, scanty or profuse menstruation, &c., together with frequent pulse ; one or two fits of chilliness daily ; morning perspirations, if the bowels are confined : otherwise it may be diarrhœa, and in fact the ordinary symptoms of phthisis, whether tubercles have as yet become deposited or not.

Sec. 63. When inflammation of the pulmonary substance has continued for a certain length of time, differing according to circumstances, it is found to undergo changes in its consistence and structure. When the inflammation occurs in a habit previously healthy, the lungy substance becomes softened and suppurates ; but when a phthisical predisposition prevails, and the inflammation is of a subacute character, the pulmonary tissue becomes indurated and contracted. This induration varies as to its colour, being sometimes dusky red, at others blackish, occasionally

yellowish or greyish. Let me now direct you to the effects which this induration produces, by means of which you will be enabled to diagnose its existence.

Sec. 64. The local signs of induration are a marked dulness on percussion, together with a rough, muffled, feeble respiratory murmur, which has more or less of a metallic character. When the individual speaks, you hear a loud resonance of the voice over the seat of the induration. This resonance, which is called *Bronchophony*, is produced by the indurated substance being in harmony with the particular notes sounded by the larynx. You must all have perceived, that when present in a church during the playing of the organ, at a certain note the whole building vibrates. Again, if you place one violin on a table and balance minute slips of paper on its strings, you may, by drawing a bow across one of the strings of another violin at a distance, cause the slip of paper to be displaced from the similar string of the first violin, provided it be in perfect unison with it, while the papers on the other strings will remain undisturbed. Or if you adjust a number of slips of paper on the strings of a piano-forte, and then after pressing the pedal, strike one of the notes, all the strings that are octaves to it, together with the thirds and fifths, will vibrate and shift the papers, while all the rest remain unaffected. It is on this principle that pedals are used with stringed instruments, in order that by increasing the quantity of vibration, a richness and power may be given to the tone. Now it is upon precisely a similar principle

you are enabled to hear bronchophony. Under ordinary circumstances the lung is not in unison with any of the notes produced in speaking ; but when it becomes indurated or solidified, an unison is established with some of the vocal sounds, and this sound becoming produced, a resonance is established in the indurated part, which can be heard by means of the stethoscope.

But this resonance cannot be well felt : on the contrary, the looser and coarser vibrations produced in the healthy lung, and which cannot be detected by the ear, are much more perceptible to the touch. If you place your fingers on the chest under the clavicle of a healthy person, you will perceive while he is speaking, a distinct vibration ; but in the cases where bronchophony is most remarkable to the ear, this vibration to the touch is much diminished.

In the seat of the induration you will often perceive the sounds of the heart very audible, sometimes even more so than in the proper region of this organ. This phenomenon depends upon the same cause as that which produces bronchophony, namely, the indurated lung being in unison with the sounds produced by the heart.

When the induration is exactly in the summit of the lung, you will occasionally hear a distinct bruit de soufflet in its site. The source of this bruit is no doubt the subclavian artery, which is probably in such cases, dragged out of its course by the contracted lung tied to it by pleural adhesions.

This contraction of the lung which occurs simul-

taneously with its induration, is the source of other phenomena—it causes a drawing in of the thoracic parietes in this situation, together with frequently a dislocation of the clavicle from its normal position. These effects are subsequently much increased by the formation and contraction of cavities, producing a puckered state of the lung ; but they may result in a considerable degree from mere induration.

Sec. 65. It is easy to understand that this indurated and contracted condition of a portion of the lung, must offer a considerable obstacle to the ingress of air. The mechanical efforts made during inspiration, continue, however, to draw in an equal quantity of gases into the chest. If these cannot penetrate one portion of the lungy substance, they must another, and the air-cells of this latter part, therefore, become distended. By this forcible distension their elasticity becomes diminished, and they more readily yield to future inhalations. In this manner when part of the lung is indurated and contracted, it frequently happens that dilatation of another portion of the air-cells is produced. This which is called pulmonary emphysema is a very common complication of Phthisis, and its production would appear to be sometimes favourable ; for nothing is more common than to find in the lungs of persons who have had extensive emphysema, masses of indurated tissues, containing tubercles and ancient cavities frequently half cicatrized, although these persons may have presented no symptoms of Phthisis during many years before death. And it is not difficult to un-

derstand, that the pressure exercised by dilated air-cells, by rendering the occurrence of congestion difficult, may successfully oppose one of the elementary lesions of Phthisis. But there is another and more profound cause why emphysema should prevent the development of Phthisis. Emphysema interferes most materially with respiration, and thus diminishes the aerification of the blood; less oxygen being carried to the tissues, their waste is diminished, and a diminution of waste is evidently equivalent to an increased energy of growth. We are thus led to see, that emphysema is calculated to neutralize the Phthisical predisposition, which you will recollect essentially consists in a deficient force of nutrition.

Sec. 66. But induration of the pulmonary tissue not only presents an obstacle to the ingress of air, but materially obstructs the circulation of the blood. This retardation of blood in the pulmonary artery re-acts upon the walls of the right ventricle, when the induration is extensive, and causes its cavity to become dilated.* This dilatation may proceed so far as to cause this ventricle to form the apex of the heart. In this case the sounds of the heart will become louder, the first sound shorter so as to approach to the fœtal "*tic tac*," and there will be somewhat increased dulness in the cardiac region extending towards the right side, in the

* Dilatation of the left ventricle is a more frequent lesion in Phthisis, than that of the right. In fact, there is seldom sufficient induration of the lung to produce the latter; but the heart shares in the general emaciation, and, in its atrophied conditions, often dilates under the force necessary to carry on the systemic circulation.

direction of the sternum. A similar condition of the right ventricle has been described by Mr. O'Ferrall in mitral valve disease.

The close vascular connection between the right cavities of the heart and the liver, will cause obstruction in the former to produce congestion in the latter organ. It will be liable to become more or less swollen ; a circumstance that may be ascertained by the dulness on percussion being perceptible below the margin of the ribs, and a dull pain will be felt in the right hypochondrium.

Hepatic congestion produces portal engorgement, and the bile will be secreted in increased quantity. But we have seen that the pulmonary induration interferes with the aeration of the blood, and consequently, nitrogenized products of waste will not be yielded to the liver in sufficient quantity to form healthy bile. The fatty parts of this secretion will, therefore, predominate, and the acini being gorged with these, the liver will acquire a greasy condition, called fatty liver—a state of this organ almost peculiar to Phthisis.

The same obstruction in the right ventricle, that produces engorgement of the liver, is also apt to cause venous congestion in the extremities ; and thus the ancles are liable to become swollen, and the extremities of the fingers and toes to acquire a clubbed appearance.

Sec. 67. The obstruction to the circulation through the lungs, caused by induration, is likewise a frequent

cause of pulmonary congestion. These are of very disastrous consequences in the progress of the disease, much facilitating tubercular deposition. They also give occasion to hæmoptysis, and much increase the dyspnœa. The engorgement of the liver disposes also to congestion of the gastric and mesenteric veins ; and this may be an occasional cause of hæmatemesis diarrhœa, or even of ascites, besides tending to abdominal tuberculization.

Sec. 68. But induration of the lungs has no effect on the hectic, or other symptoms of secondary irritation. It may exist to a great extent, provided it be unaccompanied by irritation or inflammation, without giving rise to rigors, rapid pulse, night sweats, cough, altered voice, anorexia, thirst, constipation, amenorrhœa, or generally what are called rational symptoms of Phthisis.

Sec. 69. You may remark, that many of the signs that I have ascribed to induration, are commonly set down to solidification from pneumonia. And no doubt a solidification of the pulmonary tissue from any cause, is capable of producing them : such are bronchophony and diminished vibration of the voice as felt by the hand. But in Phthisis, the pneumonia of the upper lobes seldom, of itself, proceeds so far towards solidification as to produce these signs. Others ascribe them to solidification from masses of tubercles ; but I cannot conceive how any one can do so, who is much in the habit of examining lungs after death : for nothing can be more rare, than to find masses of tubercles sufficient to produce these effects.

Sec. 70. Let us now proceed to examine the signs of ulceration. I have already told you, that when tubercles have sojourned for a variable period in the pulmonary tissue, they frequently undergo a process of softening, and are converted into a matter similar to pus ; the indurated tissue in the vicinity at the same time ulcerates and suppurates, and a cavity becomes formed, full of pus and softened tubercle, with flakes of unsoftened tubercle mixed with the liquid portion. These cavities soon communicate with the neighbouring bronchi, and the inspired air washes out, if I may so say, the contents of these cavities. At first, a single bubble of pus is forced out at each inspiration ;* afterwards as the cavity grows larger, the fluid comes out in two or three drops following each other, and bye and bye, when the vomica attains the size of a nut or upwards, a complete churning of its contents takes place during expiration and inspiration. The simple bubble often closely resembles the click of a valve, or as Dr. Stokes says, the tick of a watch. The succession of bubbles constitutes what some writers call, cavernulous rale, whilst the churning sound, localized to the site of the ulceration, has been called gurgling, or gargouillement, a name which well expresses its nature.

Sec. 71. The suppuration that accompanies the ulceration and softening in Phthisis, demands an in-

* The sound heard is, as if a drop of liquid had flowed out silently during expiration, and been forced back with a "click" during the following inspiration. It is often accompanied by a sonorous or sibilous rale.

creased flow of blood towards the part ; and this is not only calculated to increase the hectic and general symptoms, but also, unhappily promotes the deposition of new tubercles. Lannec observed, that it was during the softening of one crop of tubercles, another was apt to be formed. According as the suppuration becomes fully established, the hectic usually diminishes ; large secretion from an organ having the effect of diminishing irritation.

Sec. 72. It is questionable whether it be the ulceration and suppuration of the lungy substance that produces the softening, or the softening of the tubercle that causes ulceration and suppuration. The latter would appear, however, to be most consonant with the whole of the phenomena ; for it is frequently observed, that the portions of mucous membrane which are touched by the softened tubercular matter during its expectoration, are apt to become ulcerated, a lesion otherwise rare in the pulmonary mucous membrane. The lining membrane of a bronchial tube, leading to a tuberculous cavity, is often found studded with ulcers, while no other portion of the mucous membrane is similarly affected.

Sec. 73. We have already seen that tubercular abscesses follow the ordinary laws of abscess in making their way along the least organized route to the nearest surface, with which they form fistular communications. It is only when these abscesses have communicated by fistula with the bronchial tubes, that the signs of ulceration I have just described can be recog-

nized. As long as pulmonary abscesses remain sealed up by surrounding induration, you have no means of ascertaining their presence. It is only after the formation of fistulous means of escape for their contents that you can hear the click of the valve, the cavernulous rale or the gargouillement. The occurrence of these signs is, therefore, an evidence of the establishment of bronchial fistula ; but besides these you have the proofs derived from the sputa.

Sec. 74. The sputa expectorated at different periods in Phthisis, varies according to the lesions existing in the several stages. During the stage of irritation, all secretion is suspended, and the cough is consequently dry. If the stage of inflammation consist in a bronchitis, the sputa will vary according to the nature of the catarrh. Very rarely it is the crude bronchitic sputa, transparent, glairy, coagulable by heat, and very albuminous ; more frequently it is the concocted sputa, opaque, in defined clots with ragged edges, rendered lighter than water by the bubbles of air mixed with it, but actually specifically heavier, consisting of very little albumen, principally of the spherical granulated globules of mucous, suspended in a viscid fluid, often alkaline in its reaction. This kind of sputa is sometimes again mixed with pus, derived from a true suppurative secretion of the mucous passages, more albuminous than the mere mucous, and yielding an oil to æther when agitated with it. This variety of sputa is a sign of sub-acute or even asthenic inflammation of the lining membrane. A still more common va-

riety of sputa in Phthisis, especially in cases of extreme cachexia, is the pituitary. This is expectorated in enormous quantities, has the appearance of the serum of whey, is white and frothy on its surface ; the microscope detects in it numerous flakes of epithelium, but few or no mucous globules, and it is scarcely, if at all albuminous ; it has a very salty taste. When this kind of sputa is present, emphysema will often be found to come on. After the establishment of bronchial fistula, with a tuberculous cavity, the sputa generally alters in its character ; it now becomes highly albuminous ; when examined by the microscope it is found to abound in pus globules and other globules much resembling those of pus, but varying exceedingly in size ; these are softened tubercles. White cheesy flakes are also to be observed in it, which sometimes so much abound as to give it a pulpy consistence, at others these are very scanty. In all the foregoing varieties of sputa, blood globules may occasionally be seen ; but the true rusty sputa of pneumonia is scarcely ever to be recognized in Phthisis.

Sec. 75. Besides the communication with the bronchial tubes, tubercular cavities may form fistulas in many other directions ; through the adherent pleura, to the muscles or integuments, or even as far as the dermoid surface ; but the most usual and important is the communication with the pleural cavity, constituting Pneumo thorax.

Sec. 76. The supervention of this lesion is generally marked by sudden and extreme orthopnea and pro-

found collapse, while the pulse is small and thready, the extremities cold, and drops of perspiration hang on the forehead. After a time there is usually a recovery from these symptoms, and then you will be enabled to study the physical phenomena. Upon percussing the side, you perceive a drum-like resonance. You can easily understand that this is produced by the air getting into the cavity of the pleura, and accumulating there, it distends the side, and displaces the neighbouring viscera. But you may ask, how is the air enabled to accumulate in the cavity of the pleura, when the lung is naturally of such a bulk as by its compression to keep both surfaces of the pleura in contact? This is frequently explained by saying, that as soon as the cavity of the pleura has a communication established with the external air, the pressure of the atmosphere causes the lung to collapse. No such thing. The pressure of the atmosphere is just as much exerted before the occurrence of fistula as afterwards, and a free opening into the pleura will not cause the lung to collapse. But the reason why the lung is compressed—not collapsed—in pneumo-thorax, is, because the opening is not free—it is a minute valvular slit, or more frequently a cribriform perforation, which permits the air to be drawn into the pleura by each mechanical expansion of the thoracic parietes; but during the contraction of the chest, the pressure of the air already admitted closes this minute orifice, and so its escape is prevented, and thus it is that a large quantity of air is enabled to accumulate.

The tympanitic percussion is, therefore, one of the signs of a fistulous communication with the pleura. Besides this, if shortly after the opening of the fistula, you apply your ear to the chest, you will hear at almost every inspiration, a musical note like the stroke of a small bell, or the sound produced by tapping the edge of a wine-glass with a knife ; this is called metallic tinkling. It may be produced by the bursting of bubbles of fluid forced by the inspired air along the fistula, into the confined air contained in the pleural cavity ; or by the inspired air bubbling up through the liquid effusion ; or by the dropping of liquid from the summit of the inflated bag into liquid collected at the bottom.* The first is, I conceive, the mode of its production in recent pneumo-thorax ; for, as I have said, it occurs with nearly every inspiration. By degrees, however, the phenomenon becomes less constant, you seldom hear it in some hours after the bursting of the fistula, except upon a sudden alteration of the position of the patient.

According as metallic tinkling becomes less frequent, a new phenomenon presents itself. At each inspiration, you hear the air rushing into the cavity of the pleura, and producing a sound similar to what occurs when you blow into a bottle. This is called amphoric respiration, and is caused, as I think, by the fistula becoming larger and more freely admitting the ingress of the air, and the same cause, permitting the ready escape of the liquid contents of the tubercular cavities, accounts for the cessation of metallic tinkling.

At the same time that you perceive the amphoric respiration, if you desire the patient to speak, you will hear his voice resounding as if under a vault. This occurs, as I have already explained when speaking of Bronchophy, when the cavity of the pleura is in musical unison with the tones produced by the voice. It is called amphoric resonance.

If the patient cough during your examination, the noise produced will be like that produced by a person coughing into an empty barrel ; this is the amphoric cough. If, while the patient is speaking, you place your hand upon his side, you will not perceive any vibration communicated by his voice. In this respect air resembles liquid, which, by separating the lung from the side, prevents the vocal vibrations from being felt.

Sec. 77. Air is not long present in the cavity of the pleura until the latter membrane sets up an inflammatory action, in consequence of which, liquids become secreted into this serous sac. You can recognise the supervention of this new effusion by the dulness offered to percussion in the most depending part of the bag, and by the absence of amphoric respiration in the same situation. If you now shake the patient, or if he performs any sudden motion, you may hear the liquid splashing in the cavity, which is partly filled with air. This sign is called succussion ; and as Lænnec has shewn, it can only occur under the circumstances I have just described. Except in cases of pneumothorax, empyema is very rare in Phthisis.

Sec. 78. It has often created surprise, that the liquid contents of the pleura, in complications of empyema and pneumothorax, do not undergo any putrefactive changes ; but if air is admitted by paracentesis, in these cases putrefaction very rapidly sets in. The reason of this is, that oxygen is necessary to putrefaction, and the air that passes through a pulmonary fistula into the pleura is deprived of all its oxygen before it reaches that cavity.

Sec. 79. The case of pneumothorax by fistula, that I have been describing, is that which is most common, and in which a tuberculous cavity has fistulous communication at the same time with both a bronchial tube and the cavity of the pleura. In those rare cases, in which there is only a fistulous opening into the pleura, and not with the bronchial tube, the symptoms of pneumothorax are less acute, and those of empyema comparatively better marked.

Sec. 80. Pneumothorax, there is reason to believe, would be a much more frequent termination to tubercular Phthisis, were it not for a pathological fact I have already directed attention to, namely, the nearly constant obliteration of the cavity of the pleura by adhesions in the vicinity of tubercular cavities.

Sec. 81. What is the effect of the supervention of pneumothorax on the progress of Pulmonary Phthisis ? Experience has shewn it to be favourable. The compression of the lung renders the occurrence of local congestions more difficult, at the same time that the deficient aerification of the blood checks the waste of

the tissues. We thus perceive that pneumothorax acts, as regards the progress of Phthisis, in a manner similar to emphysema. But unfortunately pneumothorax is a disease so inimical to life in itself, that the reprieve afforded through it to the patient is, at the best, but of short duration.

Sec. 82. The last class of signs to which I shall call your attention, are those proper to tubercular cavities. The existence of ulceration and fistula will enable us to infer their existence ; but they have physical signs of their own, which are now necessary to explain.

Sec. 83. Tubercular cavities are generally formed by the softening of neighbouring masses of tubercle, each from the size of a pea to a bean, and the ulceration and suppuration of the surrounding indurated lungy substance. These little cavities so formed, which are seldom larger than hazel nuts, communicate with each other by fistulæ, constituting what are called anfractuous cavities. Sometimes, however, the lungy substance between the smaller cavities ulcerates away, so as to produce by the combination of several large vomicæ, which rarely in this manner acquire a considerable capacity. These vomicæ are often imperfectly divided by partial septæ, and traversed by bands of indurated lungy substance, or obliterated blood-vessels, with numerous bronchi of various sizes opening into them. Their walls are usually constituted of indurated lungy substance without any lining. Sometimes, however, a membrane

can be detected on them, and rarely a thick cartilaginous internal coating ; the latter only in very old ones, in the progress of cicatrization. This latter process operates by the gradual contraction of this cartilaginous lining, until at length, by the union of the opposite surfaces, the cavity becomes obliterated. The contents of the cavities are found to vary—sometimes they are perfectly empty ; and this is most frequently the case when they have the cartilaginous lining just described. At other times they contain pure pus ; again there is found in them a purulent looking fluid, mixed with flakes of unsoftened tubercle ; and sometimes a brownish sanious fluid, evidently a mixture of bloody serum with pus : rarely they contain coagula of blood, and very seldom, indeed, are these coagula found to have issued from an open vessel that was ruptured in their walls.

Sec. 84. We shall proceed to consider the signs, first of anfractuous cavities—then of large simple cavities. As to the signs of anfractuous cavities, I may refer you to what I have said on the signs of ulceration and fistula ; but when the cavities, after free communication with the bronchi or pleura, have emptied themselves, they then present new phenomena : the air is heard, during expiration and inspiration, to rush out of and into the caverns, producing a sound very similar to the bronchial respiration I have before described. This sign is called cavernous respiration ; and you may distinguish it from bronchial respiration by attending to the following circumstances. In the first

place you may recollect my telling you, that true bronchial respiration is scarcely ever heard in Phthisical Pneumonia. No doubt the expiration in this case becomes louder and longer, and acquires even somewhat of a tubular character ; but still it does not at all resemble the bronchial respiration you will hear in ordinary pneumonia, in the middle and lower lobes of the lungs ; secondly, cavernous respiration is circumscribed within comparatively small limits ; and thirdly, it is preceded by the signs of softening, while bronchial respiration is followed by them.

If while in the act of listening to the cavernous respiration, you desire the patient to cough, a sharp ringing sound will be heard, seemingly close to the ear ; this is called the cavernous cough. And if the patient be desired to speak, his voice will appear to proceed directly from his chest through the stethoscope ; this peculiarity of the voice is called pectoriloquy. Now the cavernous cough and pectoriloquy are produced by the same causes, as bronchophony and the amphoric phenomena. In all these cases, it is the co-existence of an harmonical unison between the sounds which the air in the larynx, and that in the bronchial tubes, in cavities, or in the pleura, is capable of producing by its vibrations ; the character of which vibrations depend in a great measure on the physical structure and consistence of the walls of the space in which that air is contained. It is on the co-existence of this unison or relation in the capability of eliciting the same tone, or an harmonic to it, that all these phenomena

depend. Therefore you may perceive, that these signs cannot necessarily be constant, in different solidifications of the lungs in the presence of cavities, or in pneumothorax. If the larynx does not, or cannot, produce the note in unison with the condition of the distant part, you will have no secondary vibrations resulting ; and although there may be induration, cavities, or pleural fistula, you will not have bronchophony, pectoriloquy, nor amphoric resonance.

When cavities form and empty themselves, the dulness on percussion, which proceeded chiefly from the preceding induration, now becomes diminished. If much indurated substance lies between the cavities and the surface, you may not perceive the greater resonance by a slight tip ; but by strong percussion you will generally be enabled to recognize it. From the extreme slowness with which changes take place in Phthisis, however, this slight difference of resonance is generally overlooked. You will, however, find an analogous phenomenon in a disease subject to rapid alterations. In pneumonia I have frequently had occasion to observe, that when clear bronchial respiration came on, unmixed with a single bubble, the percussion became decidedly more resonant. I have known an instance not long since, where the existence of solidification was denied from this cause ; and in this case the dulness was observed to increase according as resolution set in. This effect of solidification was first observed by Dr. Hudson, of Navan.

Sec. 85. We shall now proceed to study the signs of

large simple cavities. These exist but seldom in Phthisis ; but when they occur, they have signs sufficiently characteristic. When very superficial, with thin indurated walls, and containing a certain quantity of liquid, they yield upon percussion a very peculiar sound. This resembles the sound which is produced when placing the palms of your hands nearly in contact, you strike the back of one of them against your knee. It is called the *Bruit de pot féfé*.

When a large cavity, containing a little fluid, is contiguous to the pericardium, and surrounded with indurated lung, you may often hear the splashing of the liquid contents at each contraction of the heart.

In very large cavities, metallic phenomena, similar to what are heard in pneumothorax, sometimes occur. These are metallic tinkling, amphoric resonance, respiration and cough. You can distinguish the case of a large cavity with metallic phenomena from pneumothorax, by putting your hand on the patient's side, and desiring him to speak. In the instance of a cavity, you can feel the vibration of the voice : in pneumothorax you cannot do so.

Sec. 86. Before we proceed further with the subject of the diagnosis of pulmonary Phthisis, let me recapitulate the signs of the different lesions we have been heretofore studying :—

1st. Muscular debility, with increase of fat or evident emaciation, frequent pulse, and general exaggeration of respiration, without local disease sufficient to account for them ; signify a predisposition to Phthisis.

2d. Localized puerility of respiration, not supplementary, signifies pulmonary parenchymatous irritation ; comparative diminution of the length of the inspiratory murmur, denotes bronchial irritation ; and *entrecoupée*, respiration, or dry crackling *ronchus*, shews that there is both parenchymatous and bronchial irritation.

3d. Comparative dulness on percussion, feebleness of respiration, the inspiration short and feeble, the expiration louder and longer, a minute crepitus, and the expiration gradually acquiring a hard, rough, tubular character ; these signs indicate tubercular inflammation of the air-cells and parenchyma, in the great majority of instances.

4th. Diminished duration and intensity of the inspiratory murmur, the expiratory murmur unchanged, sibilous and sonorous rales, mucous rale, and a slight shade of dulness ; signify bronchial inflammation.

5th. Marked dulness and diminished resiliency on percussion, rough, muffled, feeble respiratory murmur, bronchophony, diminished vibration of the voice as felt by the hand, sounds of the heart very audible in a situation remote from the cardiac region, subclavian bruit, swelled ancles and clubbed extremities of the fingers ; indicate induration, more or less extensive, of the lungy substance.

6th. Click of the valve, cavernulous rale, and *gargouillement*, are the evidences of ulceration.

7th. The signs of ulceration, and the sputa becoming highly albuminous, mixed with globules similar to

those of pus, but very various in size, and a white, flaky, curdy matter, are the evidences of bronchial fistula.

8th. The supervention of the symptoms and signs of pneumothorax, denote pleural fistula.

9th. The signs of ulceration, or cavernous respiration and cough, together with pectoriloquy, increased contraction of the side, and somewhat increased resonance are the evidences of anfractuons cavities.

10th. Bruit de pot féfé and metallic phenomena, with vibration of voice still perceptible to the hand, denote a large cavity.

You can perceive that to derive full value from the foregoing signs it is necessary to trace the case from the commencement ; yet the means of diagnosis of every stage of Phthisis is capable of acquiring such certainty, that a skilful stethoscopist, with a good ear and a sound judgment, will rarely fall into error. You will find in many works—which, I take for granted, you have already, or will at a future period study—much more complete details, with respect to symptoms and physical signs, than would be suitable to bring before you in these lectures. It is not so much a theoretical as a practical view of the subject that I wish to point out to you, and my object will be fully attained if I can impress upon you the possibility of distinguishing the several lesions that occur in Phthisis Pulmonalis, especially the early ones ; for this is the kind of knowledge that you will find most useful for a successful treatment.

Sec. 87. As regards diagnosis, the mere enumeration of the signs of the several stages will be of little value, if you do not also study those diseases which, either by complicating Phthisis or simulating its phenomena, render its recognition difficult or obscure. I shall now, therefore, endeavour to shew you the principle sources of fallacy to which the signs of each stage of Phthisis are liable, together with the means of obviating them.

Sec. 88. To commence with the signs of Phthisical predisposition, you will frequently meet with cases where there appears to be great muscular debility at the same time that the patients seem rather corpulent than otherwise. These persons are usually past the prime of life, although you will occasionally see them but little past puberty ; they have dusky complexions ; their faces apt to be coated with a greasy perspiration ; their tongues broad, flabby, and foul, frequently indented by the teeth at the margin ; their breath foetid, and gums spongy ; they complain of head-ache, palpitation, general tremors and feebleness, constipated bowels, and often some tenderness along the course of the colon, and they often have cough, with a feeling of oppression about the chest ; all these symptoms appear to depend upon a paralyzed condition of the large intestines, and are alleviated by active purgatives.

Again, in most organic affections, especially of the womb and kidneys, you are apt to have considerable emaciation, and, it may be, a constantly rapid pulse.

Your diagnosis will in this case depend upon your ascertaining that in these cases the emaciation and fever are symptomatic and not essential.

Sec. 89. With respect to the signs of irritation in the lungs, circumscribed, exaggerated respiration loses much of its value, if there be evidence of disease elsewhere affecting the pulmonary tissue, for in that case it may be supplementary ; and again, it may be caused by irritation of the intervening lung between lobular pneumonias, when it becomes a sign of common inflammation, likely to end in suppuration, not tuberculization ; or it may indicate the stage of irritation preceding ordinary engorgement.

Elongated uvula will give rise to cough, and short inspiration, as well as other signs ; but in this case the pulmonary signs are not localized. Intercostal rheumatism, when it affects the upper part of the chest, and especially when on one side, is very apt to lead into error, for the pain occasioned by the pressure of the stethoscope causes the patient to breathe short ; and if you compare with the opposite side, you perceive a manifest difference in the length of inspiration. In what may be called the neuralgic diathesis of unmarried females, when there is dysmennorrhœa, pain in the head, pain under the left breast, across the loins, along the margin of the right hypocondrium, when the neuralgia fixes itself in any part of the thorax, the inspiration is heard in that situation to be very much shortened. The same is the case in periostitis of the ribs. In any case, in fact, in which the motions of the ribs are

painful, this shortening of the inspiration is observable. The same is the case whenever there is obstruction to the entrance of air, as in intra-thoracic tumors and emphysema. In the former the inspiration is often feeble ; in the latter not necessarily so. I say this advisedly, and in opposition to Fournet's assertion, as well as the opinions of many of the best stethoscopists in this city ; and as this is a point of very great importance, I wish to delay you a short time in its investigation.

The general impression is, that in emphysema the inspiration invariably becomes short and feeble, whilst the expiration becomes increased in duration and intensity.

Now, the observation of a great number of cases has convinced me that there is no constant alteration of the respiration in emphysema, and that the most frequent change consists in the expiration becoming totally inaudible.

You cannot judge of the relations of the two respiratory murmurs during the continuance of the signs of Bronchitis. As long as there persist sibilous and mucous rattles in the inspiration, sonorous rale in the expiration disguises the actual rythm. You must select a case, therefore, in which there are no dry nor moist bronchial rales.

Dr. Stokes has distinguished two varieties of emphysema ; in one of which the thorax is convex, the voice hollow, the cough deep, and percussion tympanitic ; in the other the chest is not altered in form, but the

heart and liver are pressed downwards to a remarkable degree, even in an early stage of the disease, and the percussion is little if at all exaggerated in resonance, although the extent of thoracic clearness is increased by the displacement of the heart and liver.

Now, if you select a case of the first variety of emphysema, in which there are no bronchitic rales, you will find the inspiration as loud, or nearly so, as in health, but commonly somewhat shortened in duration ; in the second variety the inspiratory murmur will be generally found exceedingly feeble.

But in both varieties you will find the expiration nearly inaudible, unless it be accompanied by a sonorous rale. No doubt, if you look at the motions of the chest, you will see the act of expiration to occupy a longer time than that of inspiration ; but I maintain that it can be scarcely heard by the ear.

And what is there in emphysema that should cause the expiratory murmur to become more audible ? Surely, a rarified lung is not a better conductor of sound ; nor is the air itself less passive in this case than in ordinary respiration.

The following case will bear me out in this statement ;—A boy eleven years of age presented himself at the North Dublin Dispensary for Diseases of Children, in the month of October, 1843. He complained of cough and difficulty of breathing, especially when he took any exercise. He said he was affected with the shortness of breathing for the last three years, and attributed it to his playing on the Scotch bagpipes,

which he began to learn about that time. On examination, I found the sternal, clavicular, subclavicular, and mammary regions greatly bulged out, giving to the entire upper part of the chest a globular appearance ; motions of the chest much diminished ; clearness on percussion increased almost to tympanitic over these portions ; resistance of the parietes decreased ; vocal and tussive vibration on application of the hand ; diminished respiration, rather feeble generally, *sound of inspiration alone audible*, except on the left side, where you could distinguish the expiration by a few feeble minute rales ; inspiration was not prolonged, but rather shorter, more feeble, and a little quicker than normal, and accompanied by dry, crackling rales ; frequent cough, with a little viscid expectoration, of a greyish, semi-transparent character ; circulation not quickened ; sounds of heart distant and rather feeble ; heart protruded downwards towards epigastrium, where its impulse was very evident, especially when its action happened to be at all excited more than usual ; in other respects health good.

You may also recollect I drew the attention of some of the gentlemen present a few days ago to one of the patients in the dispensary attached to this hospital, who complained of asthma, under which, he said, he laboured for many years. His chest was greatly bulged out, but more in the middle regions than the case I have already detailed ; the other symptoms were in many respects the same, but I then made you severally examine for yourselves, and be satisfied that the expira-

tion, so far from being lengthened, was not in this case at all audible.

To proceed with the causes which may shorten the inspiratory murmur. Nervous affections also frequently serve to shorten the inspiration. This is generally universal ; but it may happen in hysteria that the paroxysm may come on while we are examining one lung, having previously found the rythm natural in the other.

Nervous affections, and pain in the costal movements, may also give rise to *entre-coupée* respiration. I have never heard the dry, crackling rale from these causes—but I think it not impossible.

Sec. 90. We shall now turn our attention to the fallacies liable to affect the signs of inflammation ; and in the first place, it was ascertained by Lænnec that the left side is naturally a little less resonant than the right, and by Dr. Stokes that the respiration is naturally a little louder on the left than the right side. Besides these phenomena, it is necessary to bear in mind, that tenderness of the ribs or intercostals, from periostitis, rheumatism, or any other cause, will often, unless great delicacy be used, cause the sound to seem a little dull.

General Bronchitis will very much interfere with all the local signs, but this is of less consequence in a diagnostic point of view ; for if it occur during Phthisical predisposition, its sad import is equally to be dreaded.

Pneumonia occurring in the upper lobes, will, dur-

ing the stage of engorgement, give rise to comparative dulness, together with crepitus ; but the very marked character of the crepitus, so suddenly coming on, is in itself, as I have already shewn, a diagnostic distinction.

Sometimes, under the right clavicle, you will find in certain individuals the expiration naturally possess a loud, elongated character, very remarkable when compared with the opposite side. This is important to be kept in mind, for it has given rise to errors of diagnosis. Thus, in a woman aged forty-five, this sign presented itself, together with a shade of dulness on percussion ; she had, moreover, a short, dry cough for many years. The principal symptom she presented was an uncontrollable diarrhœa, without tenesmus ; her pulse was very frequent ; her skin dry ; she was extremely emaciated. It was supposed she had Phthisis, the pulmonary disease being kept in check by the excess of the abdominal. She died, and it was discovered she had cancer of the rectum ; her lungs perfectly healthy, except, perhaps, some emphysema of the upper part of the left.

Sec. 91. Now, as to the signs of induration, those may be imitated by cured pleurisy or cured pneumonia. In the former case, the contraction of the side is, however, more general, as is also the feeble respiration. Cured pneumonia of the upper lobe is still more difficult to distinguish. A woman, during convalescence from pneumonia of the lower part of the left lung, was observed to get a fresh access of fever and dyspnœa,

and her cough to become harder and more troublesome. Upon examination, there was found comparative dullness under right clavicle, and a loud crepitating rale. By leeching and the internal use of mercury, which had not been previously exhibited, the signs rapidly disappeared. She was examined two years afterwards, and great falling in of the parieties of the upper part of the right side was found, with comparative dullness and feeble respiration. Now, at the time this examination was made, she did not present a single rational symptom of Phthisis.

Sec. 92. The signs of cavities may be imitated by dilated bronchial tubes, by pneumonic abscess, by hepatization of the upper lobes, or by cyrrosis of the lung. It is by the history of the case and the rational symptoms you will be enabled to guard your diagnosis in these several instances. Thus, if there has been previously an old mucous catarrh, with excessive expectoration—if the signs of the cavities are found in the middle lobes—if the ordinary symptoms of Phthisis be absent ; you will be led to diagnose dilated tubes. If the cavity exists in the lower lobes, preceded by an evidently acute affection, in a person who had previously enjoyed good health, you would be justified in saying it was pneumonic abscess.

You will find the differential diagnosis of Phthisical cavities in most of the modern works. I shall not, therefore, delay your time on this subject, further than to direct your attention especially to the disease called by Dr. Corrigan Cyrrosis of the lung, and one which

humanity owes him much gratitude for investigating. This disease appears to consist in a contraction of the fibrous matrix of the lung, which at the same time produces a diminution of the lung in bulk, and a drawing outwards of the bronchial tubes, so as in some instances actually to dilate them into cavities. By the diminished bulk of the lung, the side becomes contracted as in cured pleurisy, while the diaphragm is drawn up, and the heart displaced. From the condensation of the lung, it is rendered dull on percussion, and from the enormous dilatation of the bronchi, it presents the signs of cavities. It is usually found about middle life. But the following case occurred in a child :—E. N., aged 5, has been ill a year and a half ; had never perfectly recovered since she had the whooping cough at fourteen months old. She has at present atrophy of the left side of the thorax to such an extent that the deformity is plainly perceptible through the clothing ; posteriorly the left shoulder is prominent, but no deviation of the spine can be detected ; under left scapula there is a great depression ; the impulse of the heart is felt on a level with the fold of axilla ; respiration on left side in general scarcely audible, but cavernous respiration and some rale can be heard in the depression above the clavicle ; respiration on right side puerile. This child, under treatment, improved in appearance, and indeed at no time was emaciated. It is a year since the above examination was made, and she continues in the same state. I must refer you

for further details to Dr. Corrigan's admirable essay on Cyrrosis.

Sec. 93. By the preceding considerations we may be led to the following conclusions :

1st. That the symptoms of phthisical pre-disposition are of greater value in proportion as they are evidently essential.

2nd. That the signs of pulmonary irritation and those of bronchial inflammation acquire their chief importance from occurring in persons phthisically pre-disposed.

3rd. That the signs of tubercular parenchymatous inflammation are peculiar, and so have a positive diagnostic value, but that this is increased by the co-existence of a phthisical pre-disposition.

4th. That the signs of induration, as regards the diagnosis of tubercles, are only of value in combination with the rational symptoms of Phthisis.

5th. That the signs of cavities acquire all their importance from the history and progress of the case, in connection with rational symptoms.

Sec. 94. I may be permitted to add a few more observations before concluding the subject of the diagnosis of Phthisis.

1st. As regards hæmoptysis, you will often meet with persons who have never spat blood from the commencement to the termination of phthisical disease. On the contrary, hæmoptysis, although profuse, if evidently vicarious, is not necessarily a bad symptom ;

and it is no uncommon thing for hæmoptysis to prevail, especially during the first months of pregnancy, in certain individuals, in the same way as others will suffer from pyrosis or profuse salivation.

2nd. With respect to purulent expectoration, it is a symptom of no value when taken alone. Dr. Green, of this city, has lately shewn, that during the absorption of empyema, a very copious purulent expectoration sometimes occurs, without any bad effect. In these cases there is probably a suppurative process of secretion set up by the bronchial tubes, vicarious to that from the pleural surface. But it would be quite opposed to all sound physiological induction, to imagine that there was any metastasis or transference of the pus from one situation to the other. Dr. MacDonnell has lately written a most excellent essay on this subject in the Dublin Journal.

3rd. The sign of diminished vibration of the voice, as felt by the hand, is really of no value in Phthisis ; for this vibration is naturally greater under the right clavicle than under the left, and even a considerable degree of induration on the right side, sufficient to produce the most marked dulness on percussion, will be rarely capable of diminishing the vibration enough to cause it to be equal on both sides.

We shall now leave the subject of phthisical diagnosis. I am aware that I have treated it in a comparatively imperfect manner, but it has not been my intention to render on your parts the study of the

standard works unnecessary ; in these you will find all that I have omitted. My object has been to occupy a new ground, and to represent to you the means of recognising the stages, in a manner, as I conceive, better adapted for practical application ; and I hope that when we come to the study of the treatment, you will find that your attention hitherto has not been misapplied.

LECTURE III.

ON THE TREATMENT OF PHTHISIS.

SEC. 95. We have, in the preceding lectures, considered the pathology and diagnosis of Phthisis Pulmonalis. These are subjects of very great interest in themselves, and the philosophical physician will always devote much attention to their study. But the point of view under which they must ever assume the highest importance, is in their connection with treatment. The noblest attribute of the science of medicine is that whereby its cultivators are enabled to alleviate human suffering, and to interpose the shield of therapeutics before the threatened dart of death. And if at any time we are enabled to rescue the child of a fond and devoted parent, or the stay of a depending family from the dark recesses of the lone and silent tomb, appearing in the no distant perspective ready to receive them, we deeply feel at such a moment how utterly insignificant, in the comparison, are the self gratulations to which the most brilliant discoveries in the abstract sciences can give rise. Proceeding, therefore, from the information which we have already acquired, let us now direct our attention to the treatment of this disease.

The pathology of Phthisis has been investigated with infinite pains. Its diagnosis has grown into a distinct science. For this purpose every aid which physics or chemistry could afford, has been taken advantage of ; yet is it strange how little the treatment of this disease has been improved. This, the principal end of medical study, remains at the present day little changed from what it was in the time of Celsus. It is a curious thing to find, that the very remedies which he recommended, are those that are even now chiefly depended upon. Thus, he advises, if the patient's strength should continue, a long voyage ; for instance, from Italy to Alexandria. He recommends a total abstinence from business, and from every thing that may agitate the mind. He desires the patient to avoid, equally, exposure to the sun or to cold. He says the mouth should be covered, the cheeks veiled ; and while the cough continues, a temperate diet, and cold water for drink. Milk, he remarks, that in acute fever and inflammation is hurtful, is, on the contrary, here beneficial. When there is but little fever, he advises gentle exercise and mild friction ; the bath to be avoided ; the drink to be sour, such as onions infused in vinegar, or mucilaginous made with starch and milk ; also the employment of lettuce ; and if wine be taken, it ought to be light and austere. If the cough and fever, however, be severe, and evident wasting of the body takes place, he says, that more powerful means must be employed. He now directs the actual cautery to be applied under the chin, on the throat,

and under each breast, and beneath the scapula, and that the formation of ulcers in these situations should be encouraged, unless the cough abate. Along with this, strong friction should be applied to the extremities, gentle friction to the chest ; these, together with the internal use of the juice of plantain, boiled with the honey of horehound, constitute the principal means of treatment that he advises. After hearing this, look into any of the modern works on Phthisis, and see the treatment advised—sea voyages, perfect tranquillity, an equable temperature, mild, nutritious diet, gentle exercise, refrigerant drinks ; together with the use of narcotics, powerful counter-irritations, and gentle tonic expectorants ; these constitute the staple of treatment in all. It may be that short voyages are now recommended in place of long ones, that newly invented wire-gauze respirators supplant the coarse contrivances of former days, that Albespiere's plasters are now employed instead of the actual cautery ; but ages have rolled by, empires have disappeared, and the essential elements of treatment in this disease remain unchanged.

Two explanations of this fact may be afforded. Either the true principles of treatment were early recognised, and subsequent experience has only confirmed their value ; or physicians, having but very lately arrived at any accurate results with respect to the pathology and diagnosis of this disease, have been engrossed in investigating the details of these branches, to the exclusion of a careful study of the modes of

treatment. Both these explanations are more or less founded on truth. There remains little doubt, that all the success that has been hitherto obtained in the palliation or cure of Phthisis, has resulted from the application of means long known and appreciated. It is equally certain, that these means have prospered in the hands of few ; that the majority of medical men, at the present day, look on Phthisis as incurable ; and that scarcely any attempt has been made to define the exact indications under which special remedies ought to be exhibited.

Sec. 96. It must be acknowledged, that little information is in general to be gained by reading the directions for the treatment of any disease afforded by the majority of authors. You take up a monograph work on a given disease ; you find an excellent and laborious description of its morbid anatomy ; you learn a number of minute marks by which you may be enabled to diagnose its presence : but when you arrive at its treatment, you feel disheartened by vague generalities—that general bleeding is sometimes beneficial, at others pernicious ; that local bleeding is similarly circumstanced ; that you should give purgatives if the bowels be confined, or astringents if diarrhœa should prevail. The relative value of emetics, narcotics, diaphoretics, diuretics, &c., are enlarged on in a like manner, and the remedial directions are wound up by some scattered allusions to aliment, and what have been so inappropriately called the “non naturals.” It is from this extremely unphilosophical plan of describ-

ing treatment, that most practical and experienced men acquire in time a disgust to medical reading ; and it is this cause which renders clinical instruction the only means, at the present day, of acquiring medical knowledge. Yet it cannot be denied, that a code of exact therapeutic rules would be a gift of the highest value to the student of medicine, in assisting his bedside observation ; and I believe the construction of such a code, although very difficult, and on many points requiring further investigation, would be by no means impossible.

Sec. 97. There are two methods of regarding treatment, which I wish to allude to, because they are equally objectionable. By the first, diseases are treated according to their names ; by the second, according to their symptoms. The first is what the vulgar look to. They seek a cure for each disease ; and their axiom is, “stuff a cold, and starve a fever.” Unfortunately men that are called doctors often imitate them in this respect, and bleed a patient because his disease is called a Pneumonia or an Apoplexy ; or deluge him with bark because it is called an Ague. The merest smattering of medical knowledge will enable you to detect this fallacy ; to perceive that two cases called by the same name, really constitute very different diseases ; and that the treatment that would be proper in one stage, would be most injudicious in another. The method of treating according to symptoms is, however, much more plausible ; because it is founded to a certain extent on truth. By this plan you give diure-

tics, if the urine be diminished ; diaphoretics, if the skin be dry ; you exhibit emenagogues, if the menses be suppressed ; narcotics, if pain or wakefulness be present ; and so forth. Now, I consider this to be one of the most mischievous habits into which the physician can fall ; and as it is exceedingly prevalent in the treatment of Phthisis, I shall take some pains to point out to you the sources of its danger.

Sec. 98. If the same symptoms were always produced by the same causes, you might then have some excuse for treating it in the same manner ; although, even in that case, different constitutions would require some modification in your formulæ. But the fact is, that there is no single symptom that may not arise from a great variety of causes, some of these being directly opposed in their essential nature ; and if this be proved, it is quite evident, that you cannot treat any symptom by a constant system of medication.

Let me run over the different symptoms of Phthisis Pulmonalis, and enumerate the causes which may originate them. The *cough* may arise from primary inflammation of the larynx ; or from an irritation of the larynx, secondary to irritation in the air-cells and minute bronchi ; or from a nervous excitability of the larynx, rendering it more susceptible to the stimulus of air, and causing it to be thrown into a convulsive action ; or from the stimulus of bronchial expectoration ; or from the irritating contact of expectoration from cavities. The *dyspnœa* may be subordinate to the fever that accompanies emaciation, without any

local origin ; or it may be due to local pulmonary irritation ; or to the impediment to aeration, which induration of the lung presents ; or to the fleeting pulmonary congestion which induration of the lung is liable to produce ; or to the compression of the lung from pneumothorax or emphysema ; or to the impediment to the motion of the lung, caused by vesicular emphysema ; or to the asphyxiating influence of super-secretion into the bronchi ; or to the suffocative effect of the bursting of a vomica into a bronchus. The *frequent pulse* may, as we have before seen, be a part of the fever of emaciation ; or it may be sympathetic of local pulmonary irritation or inflammation ; or it may be indicative of the access which precedes tubercular secretion ; or of the similar reaction which marks the commencement of suppuration ; or it may be, that it is preceded by inflammation of some distant organ. The *rigors and frequent chills* may result from a diminished power of generating heat, depending on the diminished nutrition which constitutes the pre-disposing cause of the disease ; or it may usher in the repeated intercurrent pneumonias ; or the fevers of tuberculization or suppuration ; or it may mark the access of distant inflammations. The *night sweats* may depend on the rapid circulation of the fever of emaciation occurring in the relaxed condition of deficient growth ; or they may be critical to the repeated fevers of intercurrent pneumonias, tuberculization, and suppuration already referred to ; or they may be vicarious to the natural discharges from other surfaces, as

when they are accompanied by constipation. *Diarrhæa* may proceed from inflammation, acute or chronic, of the large intestines ; dothenenteritis tuberculization of intestines ; open cancer of intestines, &c. ; or it may depend on obstruction to the portal circulation from indurated lung ; cirrlosed liver, &c. Finally, *Hæmoptysis* may proceed from an idiopathic pulmonary congestion, and be the primary cause of the phthisical diathesis ; or it may result from the intercurrent pneumonias, so liable to occur during the course of the disease ; or it may proceed from engorgement produced by induration of the lungy substance ; or from the rupture of blood-vessels in the walls of cavities. You perceive that there is not a symptom of Phthisis but what may depend on numerous and very different causes.

Sec. 99. You can understand how erroneous your practice is liable to be, if you treat a disease according to its name, or even according to its symptoms. To be sure, in many diseases you have merely symptoms to guide you ; but recollect, that these are only valuable by developing the nature of the vital abberation, or altered organization, in which the essential character of the disease consists ; and it is these latter you have to treat, and not the symptoms, which are their indices. The great end of diagnosis is not merely to find out the seat of a disease, but also its nature, or the lesions in which it consists ; and the chief object of therapeutics, the lesions being known, is to furnish the remedies calculated to remove them,

and to restore the normal condition of the part. It is to lesions, therefore, we have to direct our treatment. This is the reason why I have been so anxious to impress on you the true pathology of pulmonary consumption, and the diagnosis of each of its lesions in their several stages. It is not necessary for us to return to these things again ; but supposing that you bear in mind the subjects of the previous lectures, I will shortly tell you what I consider the best means of combating each of those lesions.

Sec. 100. However, it is a question to be considered, whether Phthisis be a curable disease or not. And before this can be solved, it is necessary for us to agree on what may be regarded as a cure. If you insist on the discovery of means whereby tubercles may become absorbed, or induration be resolved, or abscesses be made to disappear and be replaced by normal structure, I confess that I am ignorant of any remedial method whereby such wonders can be effected. But if you look on a pleurisy as being cured, although the side be contracted and the lung compressed ; if an ulcer is considered healed, although an unsightly cicatrix occupy its site ; then I promise you, that by pursuing a proper line of treatment, you will be enabled to cure many cases of Phthisis in every stage. In many instances of incipient Phthisis you may succeed in removing every trace of the disease, and leave your patients in as good health as before they were attacked ; and in other more advanced cases, you may at least alter the disease from being a rapid and fatal one, into

a malady, troublesome no doubt, and requiring constant care, but not more distressing than the generality of chronic affections. These are strong statements, gentlemen ; but I hope to be able to support them by equally powerful evidence.

Sec. 101. What, in fact, are the lesions in which Phthisis Pulmonalis necessarily consists ? They are—a diminished force of growth or reparation ; an excessive nervous excitability ; local pulmonary irritation ; local pulmonary inflammation ; the secretion of tubercular matter ; a state of pulmonary induration ; a condition of ulceration and suppuration of the lungy substance.

Surely we are not destitute of means of combating many of these lesions. If cold, moisture, darkness, deficient nourishment, &c., are capable of producing a diminution in the energy of reparation ; we may reasonably expect that the opposite physical and diatetic conditions will combat this lesion. Besides, we possess tonic and excitant medicines whose special physiological action is to increase the activity of those vital forces under whose influence nutrition is effected. We have likewise previously seen, that a diminution in the waste or decomposition of the tissues is equivalent to an increase of supply or growth ; and it is a fact, independent of all theory, that a diminution in the amount of respiration will produce this effect. It was on the principle of neutralizing the operation of the inspired oxygen that Dr. Beddoes recommended inhalation of carburetted hydrogen in this disease ;

and there is no doubt that persons who had been weak and wasted, grew fat and strong under this treatment Naphtha, creosote, and the non-nitrogenized articles of food, such as starch, gum, and sugar, will act in a similar manner. So that, you perceive, there are many ways by which we can oppose this first and predisposing lesion of Phthisical disease.

The excessive nervous excitability, which I believe to be the consequence of emaciation, and a cause of fever, we have also remedies for. Prussic acid and opium, both directly act upon this function, and diminish its intensity.

For local irritation and inflammation we have the same remedies in Phthisis as in other diseases. No doubt we cannot push depletion, or the exhibition of contra-stimulants, to the same extent here, as when the constitution is in a sounder state ; but these lesions are of a form peculiarly amenable to counter-irritating treatment ; and although very liable to recur, are not more so than in many other chronic affections, and are easily enough subdued.

Tubercle, induration, ulceration, and suppuration ; these are lesions that lie more out of the control of medicinal agency. But even here art can afford most valuable assistance to nature, and according to the occasion retard or promote her operations. Tubercles, I acknowledge, like other solid and insoluble secretions, remain external to the influence of circulation or innervation. It is possible, that by a process unknown to us, they may be capable of undergoing a transforma-

tion into a calcareous and inert substance ; but we are ignorant of the method of effecting this change. However, we have seen, that *pure* tubercles constitute a very unimportant lesion ; that they are the result of Phthisis, and not its cause ; that they are incapable of producing any of its symptoms ; and that their presence has very little influence on the progress of the disease.

Induration, likewise, is in itself of very little injury, except for the obstruction to aeration and circulation to which it gives origin. This obstruction, although not inimical to life, except when it takes place to a great amount, is yet sufficient to give rise to symptoms that are very distressing to the patient. These symptoms are, however, capable of being considerably alleviated by treatment. Moderate depletion, derivation, and counter-irritation, will do much to diminish the dyspnœa, hæmoptysis, diarrhœa, &c., to which induration of the pulmonary tissue may give rise.

Ulceration and suppuration in themselves tend to a favourable issue. If their natural progress be not interfered with, by intercurrent inflammation, or other lesions, an ultimate process of healing and cicatrization may be relied on. The business of the practitioner under these circumstances, is simply to prevent such interference—certain that nature will do the rest.

Sec. 102. After this rapid review of the lesions which constitute pulmonary consumption, and the means which we possess of baffling them, I think you will

already be inclined to agree with me, that there is nothing necessarily fatal or incurable in this disease ; but that, on the contrary, it is just as tractable as other chronic diseases, and like them, in the inverse proportion, to the amount of structural alteration.

Sec. 103. These preliminary observations will, I trust, encourage you to enter with me, hopefully and zealously, into the details of the treatment of each stage of Phthisis. Let me entreat of you not to receive blindly the dogmas I bring before you, but boldly, yet cautiously, to reason on them, and to convince yourselves, by practical study in the wards and dispensary of the hospital, of the truth or falsehood of the principles I am about to unfold. Medicine is not a science to be learned from authorities ; but each man must acquire it by his own experience.

It is by this time scarcely necessary for me to recall to your recollection the stages into which I divide Phthisis Pulmonalis. They are,—

- 1st. The stage of predisposition.
- 2d. The stage of local irritation of the lungs.
- 3d. That of local pulmonary inflammation.
- 4th. That of induration.
- 5th. The stage of ulceration and suppuration.

You perceive that I omit any notice of tubercles ; and from what I have already said, you can perceive the cause of this omission. We have no positive means of judging when tubercles are present. When present, we know of no treatment for them ; and the best method of preventing their deposition, is by checking the

local pulmonary inflammation, which is their immediate cause.

The plan which I shall pursue in describing the treatment of each of these lesions, is, in the first place, to mention the conditions that are calculated to prove injurious ; and secondly, to point out the remedies which I believe to be adapted to their cure. In this way we may be enabled to arrive at principles, proper for guiding us in any conjunction of circumstances.

Sec. 104. To commence with the stage of phthisical predisposition, you will recollect, that we have found this to consist in a diminished force of reparation, causing atrophy of the red tissues, and signalized by muscular weakness ; the *enbonpoint* continuing, or accompanied by emaciation and essential fever. This state is sometimes congenital, sometimes produced by accidental circumstances. Several of the latter have been already alluded to, and their presence is, of course, fitted to increase the diathesis. I shall here enumerate the agents that are calculated to prove injurious in Phthisical predisposition.

Sec. 105. The physical agents that diminish the function of generating heat ; such are cold, moisture, darkness, &c. ; it is questionable whether these operate by a positive action, or whether it is the absence or diminution of the stimulating influence of heat, air, and light, which produce the particular effect.

All those causes that operate by lessening the stimulating contact of oxygen ; as a diminution in the

number of the blood-globules (the oxygen carriers) by hæmorrhage, blood-letting general or local, &c.

All those causes that diminish supply ; as innutritious food, gastric irritation, or other gastric lesions that interfere with absorption, &c.

Every agent capable of diminishing organic contractility, or the force of vital attraction ; such as the vegetable and animal poisons that give rise to intermitting and typhus fevers ; the too copious employment of emollients and diluents ; the exhibition of contra-stimulants, for example—opium, mercurial preparations, iodine, tartar emetic, colchicum, turpentine, &c., in large doses ; the use of nauseating medicines, as tartar emetic and ipecacuanha. These, however, have very different degrees of hurtful influence ; in a great measure proportioned to the length of time during which the system is subjected to their agencies : and thus some of them are occasionally employed, for a short period, in combating other lesions, without the predisposition to Phthisis being thereby appreciably increased.

Every thing calculated to increase waste ; thus fluxes of all kinds, suckling, running abscesses, medicines that increase secretion, diuretics, diaphoretics, and hydrogogue purgatives. Again ; fevers of all kinds, and the causes which produce them ; local inflammations ; the use of excitants, such as the essential oils, resins, gum ammonia ; the use of diffusibles, for example—wine, æther, &c. ; medicines calculated to increase nervous excitability, stimulating antispasmodics, strychnia, &c.

But there is no cause more calculated to increase the predisposition to Phthisis than anxiety of mind. Ignorant as we are of the mysterious connection between mind and matter, we cannot tell why this should be so ; but there is nothing longer known or better proved, than that considerable mental exertion is most likely to increase Phthisical predisposition.

Sec. 106. Now that we have seen the circumstances that are calculated to aid Phthisical predisposition, let us turn our attention to the means of removing it, which are in our power. In our endeavours to prevent or to cure this diathesis, our treatment will be much modified by the nature of the causes likely to produce it. I will, therefore, divide the modes of treatment according to the causes which may produce the Phthisical diathesis.

Sec. 107. When the diathesis is congenital, or when it is produced by cold, moisture, want of light, and innutritious food ; as when the animals of tropical climates are brought to our zoological gardens, and become emaciated and feverish ; you can easily understand that a warm climate, a free exposure to light and air, and a sufficiency of light, digestible and nutritious food, are essential to successful treatment. Thus it is, that to take a sea voyage to a milder climate, notwithstanding the numerous discomforts and inconveniences of this mode of travelling, has in all ages been a favourite advice to the phthisical. And when it is considered, that under no other circumstances are you so likely to have the above conditions combined, it is no wonder that the value of

this advice should have, in many instances, been confirmed by experience.

But you possess other means of combating the diminished power of reparation. Tonic medicines, such as cinchona and its alkalies, the preparations of iron, &c., increase the energy of digestion, the strength of the heart's action, and the power of all the nutritious functions, without necessarily increasing the frequency of the pulse, or creating any febrile disturbance. They produce these effects by their influence in increasing the force of vital attraction—the tone of the tissues. Now in proportion to this *tone* is the energy of growth ; so that tonics have a direct influence in obviating the Phthisical predisposition.

You recollect, that when there is a constitutional tendency to Phthisical disease, the embonpoint may continue, or it may be replaced by emaciation and fever. In the former case, when the patient remains fat, and the pulse retains its ordinary frequency, you may, in addition to the means already recommended, prescribe wine, or other fermented liquids in moderate quantities, provided they do not give rise to feverish symptoms. But when emaciation and fever are present, excitants and diffusibles must be strictly prohibited. The fever that accompanies emaciation we have already seen to arise from the increased conducting power of the nerves. Now we fortunately possess two medicines that are capable of diminishing this conducting power, namely opium, or its alkaloids in small doses, and hydrocyanic acid. And by exhibiting these

medicines with proper caution, you may considerably check the emaciation, according to the principles I have already shewn you.

As regards the aliment to be afforded in these cases, it should consist of a due proportion of farinaceous and animal material ; the latter to afford the most available supply of reparative nourishment to the tissues ; the former to afford to the system, according to the ingenious idea of Liebig, food for the respiration, or matter which, combining with the inspired oxygen, may shield the tissues from waste.

Sec. 108. What I have now told you constitutes the treatment of the phthisical diathesis in its simplest aspect : but when this predisposition arises from other causes, the treatment requires to be much modified. I shall proceed to examine each of these varieties in turn.

When loss of appetite, accompanied, it may be, with slight epigastric tenderness, some thirst, and constipation, accompany or precede the symptoms of Phthisical predisposition, you have reason to believe that these symptoms have been caused by a sub-acute gastritis, which, by interfering with the process of digestion, operates in an equivalent manner to an insufficient supply of food. It is remarkable that the gastritis which ushers in Phthisis Pulmonalis is generally very latent, revealing itself by very few symptoms ; frequently there is nothing but anorexia to lead you to suspect its existence. On the other hand, extensive and severe disease of the stomach seldom leads to Phthi-

sis. In far advanced scirrhus, numerous ulcerations, or considerable inflammatory softening, you may have the Phthisical diathesis established, but seldom does local pulmonary disease supervene. It would appear as if a great amount of disease in the stomach had a tendency to prevent disease establishing itself elsewhere, probably by a revulsive or derivative action.

When gastritis is the cause of the phthisical diathesis, the treatment of the latter must be considerably modified. It is evident that your primary object must be to subdue the gastritis, and for this purpose you must waive the employment of some of the means to which you might otherwise have recourse. Thus, you cannot exhibit tonics, excitants, or diffusibles, because all these medicines are calculated to increase the gastric inflammation. You cannot give the same concentrated nourishment ; eggs, meat, &c., would be very injurious. The most nutritious diet you can dare to give is boiled bread and milk. You are thus reduced in your remedies for combatting directly the diminished energy of growth, to the physical stimulants of warmth, dry air, and light.

This appears to be the kind of case in which the attempt to combat the phthisical diathesis by diminishing waste is most likely to be successful. You can do this by causing the patient to respire an atmosphere containing little oxygen, either by sending him to a warm climate, where the air is much rarified, or by diluting the air he breathes by some innoxious gas. Nitrogen, pure hydrogen, or perhaps still better, car-

buretted hydrogen, will answer for this purpose. Another method of diminishing waste is the use of mild, emollient drinks, such as a weak solution of sugar, or gum water. These substances act favourably in two ways ; they act as emollients to the inflamed surface, diminishing the tension, heat, and irritability, and when absorbed they diminish waste by uniting with the oxygen, which would otherwise consume the tissues.

The chief object to be gained, however, in the treatment of this form of phthisical predisposition is the subjugation of the gastritis, which is its cause. You combat this by the ordinary mode of treating sub-acute inflammation. You apply a few leeches to the epigastrium ; you cause the patient to dissolve gradually from time to time, small pieces of ice in his mouth ; you direct subsequently counter-irritation to be effected in the epigastric region, either by blister, or what is preferable, by means of croton oil, rubbed on in the form of a liniment. Besides these means, you will find much benefit from the exhibition of alkalies, largely diluted—a class of medicines possessed of much power in subduing mucous irritation ; by giving drinks containing small quantities of the vegetable acids—medicines that diminish heat and vascularity, without being liable to create reaction ; and especially by prescribing small quantities of opium or morphia, together with hydrocyanic acid ; for although these substances will not diminish irritation, (for opium in small quantities, and hydrocyanic acid in all proportions,

are destitute of influence on organic life,) still, they are capable of diminishing nervous excitability, and thus may materially assist your treatment.

Sec. 109. The next variety of phthisical predisposition to which I shall draw your attention is that produced by hæmorrhage. Of the different kinds of hæmorrhage, that which is most likely to end in Phthisis is that which takes place in the lungs, constituting either hæmoptysis or pulmonary apoplexy. There are two reasons for this ; for the hæmorrhage, by diminishing the blood globules, produces the predisposition, whilst the local congestion which gives rise to it is, in this state of predisposition, capable of producing the secretion of tubercles. When the hæmoptysis is vicarious, or when it occurs during early pregnancy, it is less liable to produce injurious results : but even in these cases I doubt whether it is not a suspicious token of determination towards the lungs. But, under any other circumstances, you ought to endeavour to check the hæmorrhage as soon as possible. You will recollect that I am now speaking of an hæmoptysis or pulmonary apoplexy occurring in a person who had appeared up to this attack in perfect health, having had previously no disease of the lungs or heart.

Yet, although it is most essential to put a stop to profuse pulmonary hæmorrhage, for the purpose of preventing the subsequent supervention of pulmonary consumption, do not imagine that success is easy to attain. On the contrary, I know of few lesions so difficult to subdue. It is essential for you, therefore,

to bear in mind all your therapeutic resources, as well as the circumstances that are liable to produce relapse. In accordance with my plan, I shall first introduce to you these latter.

Sec. 110. In the first place, all mental or physical exertion is to be avoided. It is an old tale, the favourite theme of poets and romancists, that the violent passions of rage and grief, of joy or despair, will cause “a vein to burst, and the sweet lips pure dies be dabbled with the deep blood which runs o’er,” and the experience of every physician, will tell that this popular belief is founded on no fiction. But exertions of a much inferior nature, may be attended with serious effects: thus in hospital practice you will find the hæmoptysis almost invariably to return on the day when the patients are visited by their friends; and I have seen an instance where, the mere fatigue of undergoing a rather hurried physical examination of the chest, brought on a fatal hæmorrhage.

In the next place, whatever is calculated to hurry the circulation, and with it the mechanical process of respiration, is calculated to be injurious. Such are excitants and diffusibles of all kinds, and even the labour of digestion. External warmth, also, is objectionable in two ways; first, if the air of the chamber in which the invalid resides be warmed, it becomes rarefied, and thus renders necessary a more frequent respiration; and the effect of increased temperature upon the system is to hurry the circulation. On this principle, warm clothing and hot drinks are hurtful.

Whatever is adapted to produce plethora is calculated to favour hæmorrhage ; much drink, on the one hand, or suppressed secretions, on the other, are liable to produce this effect.

Lastly, any cause liable to add to the pulmonary irritation will do harm ; such as the inhalation of irritating vapours, stimulants of all kinds, &c.

The preceding observations will shew you how limited are our means of combating the Phthisical predisposition in this case. The physical agents which, under other circumstances, are so beneficial, must be here tenaciously avoided. Nourishing food cannot dare to be exhibited ; stimulants and diffusibles must be abandoned ; and even tonics must be given with much caution, and only under the conditions that I shall by and by describe. The means of diminishing waste, so likely to be useful when gastritis is the cause of Phthisical predisposition, are in this instance much limited in their employment ; for the effort to inhale would much more than counterbalance any benefit to be derived from the breathing of hydrogen or carburated hydrogen gases. So that in this respect you are reduced to the internal exhibition of gum-water and syrups, or other substances capable of acting in a similar manner ; and this, together with the diminution of sympathy by means of hydrocyanic acid, constitutes the sole means that remain in your power for combating the Phthisical diathesis.

Sec. 110. You perceive, then, in hæmorrhage from the lungs, the extreme importance of checking this

lesion at the first, before the predisposition to Phthisis can become established ; and to the means of effecting this I shall now draw your attention.

In the first instance, you should diminish plethora, particularly pulmonary congestion, as speedily as possible. If the pulse be full, especially if it be hard and not easily compressed, bleed from the arm, the patient being in an erect position, and from a large orifice, until faintness is produced. Dr. Marshall Hall has shewn, that an attention to these circumstances will in most instances furnish you with a guide as to the amount of blood that you may safely abstract. If the pulse be full, but not hard or resisting, I prefer bleeding from a small orifice, and in a recumbent position, not taking more than four or five ounces. The hardness of the pulse is a sign of inflammatory action, and in that case the shock which a tendency to fainting produces is serviceable ; but if no inflammation be present, your chief object in bleeding is to reduce the plethora, and it will be as well to avoid the shock to the nervous system, which can now be of no benefit. If the pulse be jerking and compressible, you had better follow the latter plan of bleeding, for in that case fainting will be too easily provoked ; and if the pulse be very frequent and thready, do not bleed generally at all. It is as well to mention that there is a species of pulse common in hæmorrhage, consisting of an alternation of strong and weak pulsations ; but I do not know any particular therapeutical indication that can be drawn from it.

Local bleeding is still more usually available than general. This may be effected either by leeches or cupping. I prefer the latter mode, for by it, with greater rapidity and certainty, you can abstract the necessary quantity of blood ; add to which, the removal of the atmospheric pressure from a part of the chest causes a determination to the surface which is highly beneficial.

Besides the diminution of the plethora, you must adopt means to abate the activity of the circulation ; and recollect that, by lessening the frequency of the pulse, you sympathetically diminish the frequency of the respiratory movement. Full doses of digitalis, tobacco, or hydro-sulphuret of ammonia, are capable of fulfilling this indication. This effect is also assisted by the exhibition of nauseating medicines, such as small doses of tartar emetic and ipecacuanha ; but the production of vomiting should be carefully avoided, for the convulsive effort and hurried circulation that accompany this act are especially calculated to increase the pulmonary congestion.

It is also most desirable that you should diminish the activity of nervous sympathy, which is very apt to be much exaggerated during hæmorrhage. This is particularly hurtful, inasmuch as the local pulmonary irritation is apt sympathetically to generate hurry in the performance of circulation and respiration. In prussic acid you have a valuable means of diminishing this function.

But all you have yet considered will have little in-

fluence, unless you can successfully oppose the local pulmonary irritation. It is this which, in the great majority of cases, is the cause of the determination towards the lungs ; and if it continue unabated, although the entire quantity of blood be diminished, a preponderance will still flow towards the irritated part ; although for a time, by means of derivation, you direct it into other channels, it will soon return to its wonted haunts ; although you may diminish the force of the general circulation, the greater suction power will still continue in the excited capillaries. Certainly you may gain something by reducing the number of the blood globules, and thus lessening their stimulating influence ; but recollect that your chief efforts must be directed to combatting the local pulmonary irritation.

You should apply bladders containing ice to the surface of the thorax ; and this done, reflect on what contra-stimulants you may employ, fitted to the particular exigency. Let us recapitulate the principal of these contra-stimulants, and see which of them are best adapted for your purpose. Opium, in large doses, is an excellent contra-stimulant under certain circumstances ; nothing can be better for controlling peritoneal irritation, and it is often of great service in pneumonia. But its proper physiological action is to increase capillary plethora ; and although in sthenic hyperœmia it may diminish the congestion, by destroying the irritation, yet there is danger by its instrumentality, of exaggerating the condition we wish to obvi-

ate. Tartar emetic, in large doses, is most serviceable in many active inflammations, particularly pneumonia ; but it is liable to produce vomiting—a phenomenon much to be deprecated during pulmonary hæmorrhage. Colchicum and turpentine, in large doses, are very efficacious in subduing inflammation. They have hitherto been chiefly used for this purpose in diseases of the eye. But it is to be remembered, that the use of calomel in combating inflammation was first deduced from the analogy of its beneficial effects in iritis ; and should these medicines fail in fulfilling our direct expectations, and exert their irritant instead of their contra-stimulant action, it is to be borne in mind, that they will then act as counter-irritants and depletives by their effect on the intestinal mucous membrane. Calomel and iodide of potassium are also powerful contra-stimulants ; but unfortunately, with the use of these we could not combine the refrigerating means which we find in other respects so serviceable ; yet I have known an obstinate hæmoptysis yield at once to a ten-grain dose of calomel. A review of the principal contra-stimulants thus leads us to the conclusion—that large doses of colchicum, or oil of turpentine, are those that are most likely to be generally applicable during pulmonary hæmorrhage.

When the plethora, force of circulation, and irritation have been diminished by the means I have mentioned, you may remove the residue of irritation, and obviate its renewal by the use of counter-irritants. With this view, saline purgatives will be found useful,

both by establishing a counter-irritation on the surface of the intestinal mucous membrane, and by causing a serous discharge, serving still further to diminish plethora. You may likewise institute an inflammatory action of the skin by means of small and repeated blisters, or by producing a constant sore with Albespiere's plasters. Croton oil liniment, tartar emetic ointment, liniment containing turpentine, blisters formed with the vinegar of cantharides, and a variety of other means of counter-irritation, may be used in different cases. If any other method deserves a preference, I think that it is due to the perpetual blister produced by the successive applications of Albespiere's plaster, the surface being in the mean time dressed with savine ointment.

At the same period, it is well to exhibit internally, vegetable acids, combined with digitalis, or some medicine for diminishing the force of the circulation. The vegetable acids are particularly calculated to diminish local heat and congestion.

A time arrives in every congestion when the sthenic becomes replaced by an asthenic condition of the solids ; when the irritation, which was the original cause of blood being drawn to the part, gives way to a diminished irritability, a weakened tone, a flaccid condition of the capillaries. But this very opposite state of the capillaries does not lessen the engorgement. On the contrary, the blood is still more liable to stagnate, from the weakened parieties of the vessels, yielding to the force of the circulatory torrent, and their lessened con-

tractibility disabling them from propelling it onwards. From this state may arise a passive hæmorrhage ; as what had previously existed was an active one. But this passive hæmorrhage requires a very different treatment. Your object in this case is to increase the tone of the capillaries ; to enable them to contract on the blood which they contain : and this is best effected by means of tonics and astringents. When, therefore, you find, that after the employment of the means already recommended ; after diminishing plethora by general and local blood-letting ; after exhibiting the requisite medicines for diminishing the force of the circulation ; after the due employment of contra-stimulants, and the establishment of an energetic counter-irritation ; you still meet occasional relapses : if every now and then a burst of hæmoptysis should still continue ; or if the sputa, copious in quantity, and concocted in its character, should always be streaked with blood ; you may now give acetate of lead, or large doses of the mineral acids, still continuing the counter-irritation, and occasionally dry cupping between the shoulders : and under a systematic treatment of this kind, you will frequently find the hæmorrhage yield.

I need scarcely add, what you may have already deduced from what I have said of the conditions that prove injurious in pulmonary hæmorrhage, that your patient must be kept in a state of perfect rest, both of mind and body ; that all kinds of excitants, diffusibles, and stimulating food, are to be strictly forbidden ; that the patient's chamber should be airy and

cool, his clothing scanty ; that he should be allowed to drink little, and that cold ; that his natural discharges should never be permitted to suffer obstruction ; and that his diet should be small in quantity, and completely farinaceous. In no case is your patient in such imminent peril as when attacked with copious pulmonary hæmorrhage ; and it is your duty to impress on him the absolute necessity of this strict regimen, if he regards health and life.

Sec. 112. I need not now dwell on the treatment of other hæmorrhages which may give origin to Phthisical diathesis. In works devoted to the subject, you will find the necessary directions given for stopping menorrhagia, hæmaturia, hæmatemesis, &c. I wish merely to insist on the necessity of checking those fluxes, otherwise the state of the constitution produced by them, will, if irritation of the lungs should intervene from any cause, speedily give rise to pulmonary Phthisis.

Sec. 113. By a similar mechanism to that of hæmorrhage, but with much less facility, does excessive super-secretion from any organ originate the Phthisical diathesis. The most common of these causes, are copious pituitary catarrh from the lungs, and diabetes mellitus. These causes, however, do not interfere with the treatment of the Phthisical predisposition ; for precisely the same indications are present in these cases. What I have said, therefore, of the treatment of congenital Phthisical diathesis, will equally apply, and need not be repeated.

Sec. 114. The diseases of the blood, in which there is a diminution of some of its elements, albuminaria, chlorosis, purpura, and scorbutus, are, in themselves, particular instances of the Phthisical diathesis. We need not be surprised, therefore, at finding, that in these, pulmonary tubercles constitute a common complication. Some modifications in the symptoms of the predisposition, as well as in the treatment, are produced by the presence of these causes. Thus, in albuminaria, the perspiration is suppressed, the urine is albuminous, and general local dropsy is apt to arise. These symptoms may originate with a true nephritis; which it is necessary to subdue before you can treat the general disease. Chlorosis may be idiopathic, or may arise from previous hæmorrhage, or other supersecretion, especially from the uterus; and according to its cause, its treatment must be modified. But in all these cases, the general principles which I have described to you for the treatment of congenital Phthisical predisposition, may be profitably pursued, with such slight changes as the peculiarity of the cause may require. Thus, in albuminaria, the warm bath, and other diaphoretic means, may be conjoined with the remedies previously recommended. In chlorosis, the preparations of iron are the tonics principally serviceable. And of these, there are none that I can so highly recommend to you, from considerable experience of its superiority, as the "Aqua Chalybeata," prepared by Messrs. Bewley, of this city. This is a solution of citrate of iron, aerated with carbonic acid, and ren-

dered agreeable to the taste by means of syrup of orange. Now it so happens, that this preparation is particularly adapted to the majority of cases of chlorosis. For in nearly every case of this disease, you will find more or less irritability of stomach, which causes the ordinary preparations of iron to be rejected, or to give rise to painful dyspeptic sensations ; not unfrequently, also, exaggerating, by sympathy, the Cephalagia so generally present. This irritability, however, becomes soothed by the carbonic acid, whose powers in this respect, have long been recognised. After having tried this preparation, on the most extensive scale, at the North Dublin Institution for the Diseases of Children, I can confidently recommend it as less likely to disagree than any other chalybeate. Indeed I have never known any ill effects from its use, except when taken on an empty stomach. I would, therefore, advise it always to be given either after or together with some solid nourishment.

In purpura ; astringents, such as alum, or acetate of lead ; or excitants, for example, oil of turpentine in small doses, a medicine you have seen so eminently successful in several cases of this disease in the wards of this hospital, should be combined with the usual treatment of Phthisical predisposition ; and in scurvy the use of vegetable acids may be carried much farther than in other varieties of this diathesis.

Sec. 115. Not the least important variety of Phthisical predisposition to which I shall call your attention, is that which is apt to follow the contagious

fevers. In the train of typhus fever, measles, scarlatina and small pox, you will often see this diathesis become established ; and no possible combination of circumstances could unfortunately be more favourable for its development. The energy of life diminished by a depressing poison, the tissues wasted by a continued fever ; if by any chance a pulmonary irritation should arise, all the conditions for pulmonary consumption are at once in activity. This is not the place to enter into the treatment of these diseases ; but I may be permitted to say, that the best way to avoid this unhappy sequel, is by farinaceous diet during the disease, to obviate waste ; by the judicious use of diffusibles to support the strength, and especially to watch and control the occurrence of pulmonary irritation.

Sec. 116. Before I leave the subject of the predisposition to Phthisis, I wish to allude to the tendency which Syphilis has of producing this state of the constitution. As soon as the poison of Syphilis penetrates the blood, this liquid becomes changed in its composition, the blood globules becoming diminished ; a change which you can frequently detect by the occurrence of musical bruit in the veins of the neck. This interesting fact, which has lately been discovered by M. Ricord, is pregnant with important pathological and therapeutical consequences. Amongst other things, it points out to us the necessity of meeting this cachectic condition, by a treatment similar to what is found so useful in chlorosis.

Sec. 117. I must now, in pursuance of the plan which I have resolved on in these lectures, direct your attention to the second stage of Phthisis, namely, that wherein, in addition to predisposition, you possess the evidences of pulmonary irritation ; previously to entering on the treatment, I shall mention the circumstances that are liable to act injuriously.

First—Mechanical exertions of the lungs of any kind ; such as playing on wind instruments, singing, or even talking.

Secondly—Stimulants of organic life ; for instance, tonics, diffusibles, or too nourishing regimen, &c.

Thirdly—Fever, from whatever cause ; whether essential or symptomatic of local inflammation in some distant part, or from the use of internal stimulants.

Fourthly—Suppression of accustomed fluxes, whether from hæmorrhoids, or of the catamenia, &c.

We may perceive, that some of the agents that are useful in Phthisical predisposition, become hurtful when irritation occurs. Thus, tonics, diffusibles, a nourishing diet, and the suppression of fluxes, are beneficial in the state of cachexia.

Sec. 118. In reflecting on the treatment of pulmonary irritation, it is necessary for us to remember, that this lesion may be either primary or secondary ; that it may either result from the impression of a too powerful stimulus acting on the tissues of the lungs, or be sympathetic of a distant inflammation. As these varieties require different modes of treatment, I shall speak of them separately.

Sec. 119. Sympathetic irritations of the lungs acquire great importance from the unceasing activity of these organs. On this account, these irritations are apt to degenerate into inflammations and organic diseases. It is, therefore, the more necessary to remove as soon as possible their exciting causes.

The longer continued these secondary irritations of the lungs may be, the more liable are they to produce organic mischief. It is, therefore, generally found to be chronic inflammations that do harm by their secondary pulmonary irritations. The chronic inflammations most frequently followed by Phthisis, are laryngitis, metritis, and nephritis.

A low and lingering irritation of a distant organ, is more dangerous by its secondary pulmonary irritation, than a more acute one. The latter often seems to shield from pulmonary consumption by a revulsive action. Thus we have already seen, that serious organic disease of the stomach seldom gives rise to Phthisis; and it is notorious, that as long as scrofulous inflammation of the glands of the neck continues in an active form, the process of tuberculization in the lungs is commonly kept in abeyance. Mania and pregnancy are also observed to have great influence in controlling the progress of pulmonary disease.

The treatment of pulmonary irritations that are secondary to distant chronic inflammation, consists partly in combating the disease to which they are sympathetic, and partly in the employment of means calculated to alleviate the pulmonary irritations them-

selves. This is not the place to speak of the management of metritis or of chronic nephritis. I shall, therefore, confine my observations to the treatment of chronic laryngitis.

This is the ordinary treatment of inflammation. It consists in subduing irritation and diminishing congestion, by leeching, contra-stimulants, and counter-irritation. The contra-stimulants usually are mercury taken internally, or used in the form of friction or by fumigation ; and iodide of potassium. The counter-irritants are blisters to the larynx, dressed with mercurial ointment ; setons in the back of the neck ; and painting the skin, over the larynx, with solution of nitrate of silver, or tincture of iodine.

The special treatment of the pulmonary irritation in these cases consists in the inhalation of the vapour of water, the application of counter-irritants to the chest, and the use of small doses of opium and hydrocyanic acid. Each of these means requires some particular notice. The fumigations are not to be effected by the aid of the inhaler, for the laborious efforts of inspiring are fitted in that case to do harm ; but the air of the apartment which the patient sleeps in may be kept surcharged with moisture, by vessels full of water kept constantly hot by the assistance of lamps. The best form of counter-irritant to use is a liniment composed of equal parts of oil of turpentine and distilled vinegar, made into an emulsion by means of the yolks of eggs ; this should be sponged over the chest two or three times in the course of the day. The util-

ity of small doses of opium and its alkaloids and hydrocyanic acid, is, that these medicines diminish the conducting power of the nerves, and thus lessen the sympathy by which the pulmonary irritation is produced.

Sec. 120. Idiopathic pulmonary irritation may be treated in a manner similar to that which is produced by sympathy with distant inflammation. An atmosphere charged with watery vapour, active counter-irritation, the use of narcotics, combined with perfect rest of the respiratory organs, an absence from all stimulants, and confinement to a farinaceous diet ; these constitute the general principles of treatment.

But, while using these means, you are not to neglect the state of Phthisical predisposition in the course of which the pulmonary irritation is supposed to have arisen ; and as soon as this irritation is subdued, the sooner you have recourse to a sea voyage, to a milder climate, the use of tonics, and the other means which I have pointed out for the diathesis, the better. It is well, however, to persist in the use of counter-irritation for a considerable time after the indications for its employment have ceased to present themselves.

Sec. 121. We shall now address ourselves to the consideration of the third stage of Phthisis, namely, that of pulmonary inflammation.

The treatment of pulmonary inflammation occurring in the Phthisical diathesis, is rendered difficult by the existence of that diathesis. I believe it to be the want of ability to overcome this difficulty that is in general the source of the too frequent failures that we witness

in the treatment of consumption. The inflammation is attempted to be cured by ordinary means, and the cachexia becomes fatally exaggerated ; or the inflammation is neglected, the diathesis alone being combatted.

Sec. 122. I need scarcely tell you, that while local inflammation exists, the use of excitants, tonics, diffusibles, stimulating diet, &c., ought to be strictly prohibited. This is equally true of Phthisical as well as of any other inflammation, but the misfortune is, that by the abandonment of them, you lose the most powerful remedies for the cachexia which is wearing down the patient. You know that blood-letting, local and general, together with the bold use of contra-stimulants, constitute the most successful means of subduing inflammation ; but unfortunately, these very things are strongly contra-indicated by the Phthisical diathesis.

The fact simply is, that you cannot contend with both these lesions at the same time, and the skill of the practitioner is displayed in the tact with which he detects the crisis, when he is to change from the strife with one lesion for the purpose of encountering the other. You must first conquer the inflammation, and then you may endeavour to strengthen the nutritive forces ; but you cannot do both together.

Sec. 123. You are also to recollect, that in endeavouring to subdue the pulmonary inflammation, you should employ such remedies as are least likely to exaggerate the Phthisical cachexia. You are thus espe-

cially prohibited from the use of general bleeding, nor, indeed, is it often called for by the symptoms. Local bleeding you should also employ very sparingly ; the application of a few leeches over the seat of the disease, or a single cupping, is all you should venture upon. I feel entirely opposed to the practice of leeching day after day, recommended by some ; there is no conduct more likely to exhaust that strength which should be so carefully husbanded.

The use of contra-stimulants has been of late, only, introduced into the treatment of Phthisical inflammation. Mercury and Iodide of Potassium are the substances that have as yet been used, but I can also recommend colchicum and oil of turpentine. In the employment of these drugs, you are to recollect, that, like bleeding, their continued exhibition is mischievous to the Phthisical diathesis. Your object should be, therefore, to hit by these means the inflammation and then at once to discontinue them. The principles that should guide you in the use of contra-stimulants in the majority of cases I believe to be the following :—First, to diminish fever, by an amount of depletion proportioned to the occasion : secondly, to exhibit the contra-stimulant that you may be led to select in doses as large as you can safely give, and at rather remote intervals : and thirdly, to avoid any thing of an anti-phlogistic nature during its use, even a drink of cold water, or a mild laxative.

But the means, above all others, upon which you have to rely in the treatment of tubercular inflammation, is

the persevering and active employment of counter-irritation. You may, as I have already said, when called to a case where pulmonary inflammation had supervened in a Phthisical diathesis, apply a few leeches or cup over the part, and you may follow this up by a few large doses of calomel or iodide of potassium, combined with opium ; but as soon as the slightest evidence of resolution sets in, when the liquid, rattling in the part, shews that secretion is being established, at once commence with the most decided counter-irritation. Apply repeated Albespiere's plasters over the affected portion of the lung ; dress the same place, in the interim of their application, with strong savine ointment ; sponge the remainder of the chest, both anteriorly and posteriorly, several times a day with the liniment of turpentine I before recommended you ; and continue steadily and perseveringly in this practice, until long after every trace of local inflammation shall have disappeared.

I can recommend to you the use of prolonged and extensive counter-irritation, from an unusually extensive experience, obtained under very peculiar circumstances and in association with one of the most remarkable charlatans that ever deceived the public or vexed the profession. In very early life, the man who was afterwards so celebrated under the name of St. John Long instructed me in oil-painting in my native city. An acquaintance thus sprung up between us, and in some time afterwards, when I went to London, having met him accidentally, we renewed our former intimacy.

I now found that he had changed his pursuits, and was engaged in endeavouring to establish his reputation as an empirical curer of consumption. I believe that at the time he had the most unbounded faith in the efficacy of his peculiar method of treatment. He infected me with his enthusiasm, and having nothing to do but amuse myself, knowing little, if any thing, of medicine, and not having the most remote idea of ever studying it as a profession, I spent the greater part of my time for some years in assisting him in his daily frictions, and at length became as expert in the operation as himself.

I confess, that at the present moment, after twelve years of regular medical study, I do not think the time that I was so strangely engaged assisting St. John Long by any means misspent. The almost intuitive knowledge that we gained of the appearance of patients labouring under the disease, and of their symptoms, from the constant communication with such multitudes as were then constantly presenting themselves before us, has been, I have since found, of infinite service to me. Although at the time I was ignorant of every thing connected with anatomy and pathology, as any gentleman need wish to be, I soon discovered that St. John Long's treatment was not infallible, and I have reason to believe that he lost great numbers by his total ignorance of diagnosis as regards the particular stages, and of the proper treatment of particular symptoms. Yet, I could not disguise from myself the fact, that numberless cases that presented all the symptoms

of confirmed decline (and these rational symptoms, gentlemen, are, in the majority of instances, strong evidences of the existence of the disease,) perfectly recovered under his care.

Looking back on the hours that I once spent with St. John Long, and comparing what my feelings then were with what they are at present, I can scarcely believe in my own identity. It is a curious subject for contemplation ; the very different aspects which circumstances assume, according to the point of view under which we consider them. I once thought that course of conduct an agreeable pastime, which now appears a reckless trifling with human health and life. I once reckoned it as amusing a thing to rob the doctors of their patients as the lawyers of their clients ; I need not say that my sentiments are now considerably altered. I did not think there was any thing intrinsically wrong in St. John Long's occupation. When we failed in curing a case I was sorry ; when we succeeded I was glad, but that was all I thought about it ; and I am sure that those who know me will bear me witness, that, had I conceived there was any thing morally erroneous in his pursuit, I would never have patronized him in it. * I believe these to be the sentiments of the majority of persons out of the profession ; and this consideration makes me cautious in attributing improper motives to others, although they may be engaged in pursuits that my judgment may condemn.

To return to our theme. I have said, gentlemen, that St. John Long frequently cured patients, who

appeared to be suffering from confirmed pulmonary consumption ; persons who had hæmoptysis, daily chills, copious night sweats, profuse curdy expectoration, extreme emaciation, &c. Reflecting upon these, it occurred to me, that, in the instances wherein he was successful, it depended upon his ignorance of all the first principles of medical science ; and this consideration it was that first led me to the study of medicine. Every day's experience since has only more and more confirmed me in this persuasion.

The principal, or, indeed, to speak more correctly, the sole element in St. John Long's treatment was counter-irritation. Towards the close of his career, when he had acquired some smattering of medical knowledge, he commenced combining this with some other remedial means, but that so unskilfully as frequently to do more harm than good. Confined to the one mode of treatment, he used that most perseveringly and vigorously, supported in this course by the strong faith of the majority of his patients ; and to this I attribute his remarkable success.

It was one of my great objects to discover some grounds of prognosis in Phthisis ; but in endeavouring to do this, I was constantly puzzled by a variety of circumstances. Thus we sometimes found, that when the pulse was very frequent, counter-irritation appeared to do harm ; while, in other cases, it appeared not to interfere with the treatment. The friction sometimes seemed to produce no effect in cases of hæmoptysis, at others to check it. In general, however, the more

decided the irritation of the skin, the greater appeared to be the benefit derived. But this was not always the case ; for occasionally, when scarcely any redness was produced by frequent applications of the liniments, (for we sometimes made an alteration in them), the most marked improvement appeared in the patient. One thing, however, I have invariably remarked, that when redness was quickly produced, and that of a bright or florid character—that case did well. Not knowing how to locate the disease, we used the counter-irritation to the whole surface of the chest ; and in doing so, we observed that in particular cases, some parts seemed to be affected more than others by its employment. In our ignorance, we took it for granted that it was adjoining to these situations that the chief seat of the disease resided. These, and many other seeming anomalies, were constantly presenting themselves to us ; and accordingly, as one suggestion after another arose in our minds, we would explain them to the patients, who received them as if they had emanated from oracles. Since that time I have devoted my attention, in a great measure, to the study of counter-irritation, by the light of medical science, and I shall now endeavour to point out to you the conditions under which this powerful remedial agent acts with the greatest certainty and power.

Broussais, in his commentaries on his own pathological propositions, appears to have recognized, very distinctly, the true principles upon which counter-irritation operates. If a man receives a wound in the

arm, and that wound is accompanied with irritation in the part, that irritation repeats itself in all the important organs. He may suffer thirst, loss of appetite, nausea, constipation, &c.,—these things shew secondary irritation in the stomach and intestines ; he may have a frequent pulse, a hot, dry skin, an increased cardiac impulse—these demonstrate an irritated condition of the circulatory apparatus ; he may labour under head-ache, intolerance of light and sound, and other phenomena, that prove how much the cerebro-spinal nervous system sympathises in the local injury ; his urine may be high-coloured and scanty, from a similar repetition of the irritation in the urinary apparatus. If, under these circumstances, a powerful stimulus be applied to any of the organs, either of two things may take place—the original irritation may be increased ; or the organ to which the stimulus is applied, may acquire a state of irritation greater than in the original site, and so become, from being a mere sympathetic affection, the principal seat of disease : this is called metastasis. Thus, as an example of the first variety ; if during the application of a blister to the leg, the patient should drink a glass of wine, the pain of the blister is likely to be much increased. And as an instance of metastasis ; let us suppose an individual labouring under gout of the great toe ; he has leeches applied to it, and during the application amuses himself by drinking a pint of port : the likelihood is, that he will be attacked with apoplexy during the night ; for the local irritation will be diminished by the depletion,

at the same time that the secondary irritation in the brain is increased by the stimulus, and the chances are, that a metastasis will occur.

Now, it is just the same physiological principle that develops itself in this instance, that physicians avail themselves of, in the employment of counter-irritation. The object that they have in view, is to produce a metastasis from an organ of vital importance labouring under irritation, to one that is less necessary to life. If, for instance, a part of the lungs be irritated, you can at once perceive how desirable it would be to transfer this irritation to the skin. And if you reflect on the principles that I have just mentioned, you can see how this can be effected.

To diminish by proper means, the original irritation, and to stimulate some other part where a secondary irritation exists, so that this may become more energetic than the original, taking care that this new seat of disease shall be so far distant from the first, that the primary irritation may not be increased by the contiguity of the second ; these are the chief elements that you have to bear in mind in the employment of this remedy. To effect these purposes, you ought, in the first place, to use such local and general depletion as circumstances may require, together with those contra-stimulants that are best calculated to diminish irritation ; and having in this manner reduced the original irritation, you can convert it into a merely secondary affection, by creating a more severe inflammation elsewhere. Then it will follow the ordinary

laws of secondary irritations, and gradually disappear, in proportion as what is now the principal disease progresses towards cure.

It is in consequence of the neglect of these principles that counter-irritation so often fails. A blister is applied to the side during the height of a pneumonia ; the irritation produced by it is, as might be expected, absorbed by the more violent disease within, little or no inflammation of the skin appears, while the pneumonia becomes exasperated. Recollect, therefore, that unless you can produce a *greater irritation* on the surface than that which exists internally, you will only do mischief by applying a stimulus to the skin.

In general, the amount of fever is a good evidence of the severity of local irritation, making allowance for the different facility with which sympathy is effected in different individuals ; so that when you have diminished the fever by depletion and contra-stimulants, you may safely have recourse to counter-irritation. But this is not the case in Phthisis. We have seen that in proportion to the emaciation, this disease is complicated with an essential fever, having no relation to local irritation ; so that the frequency of the pulse cannot afford you, in this case, any token of the severity of thoracic disease. Now from what I have already said, you may easily understand, that if much irritation exist in the lungs, counter-irritation is calculated to do harm ; so that with the same amount of fever, the use of this remedy may be at one time serviceable, at another injurious.

But if you use counter-irritation under the precautions that I have recommended to you ; if you delay its employment until, by local depletion, and the use of contra-stimulants, you have diminished the pulmonary irritation ; you may pursue this powerful mode of treatment with impunity, and with a certainty of producing a greater or less degree of alleviation in the progress of the disease.

But it appears to me that the use of counter-irritating frictions in Phthisis, is beneficial in a manner totally independent of its influence in determining a metastasis to the skin. I have already told you, that St. John Long and I have observed great improvement take place in the appearance of persons under the influence of stimulating lotions, although little or no irritation presented itself upon the surface. The ancients strongly recommended energetic frictions of the extremities in Phthisis ; and their evidence, who had no theory to support, especially deserves consideration.

In fact, I look upon the application of stimulants to the surface, particularly when combined with frictions, as a mode of treating the Phthisical diathesis from whence great benefit may be derived. The stimulants that you employ can act upon distant organs by sympathy ; or if some substance, such as oil of turpentine be used, may be absorbed, and coming in contact with the molecules of the tissues, excite them to an increased vitality. Under such circumstances we may expect an increased power of reparation and resistance to external agents, such as are produced by heat and

light, or the internal use of tonics, without the ill effects that the latter are liable to. It is in this way that I believe the counter-irritants to have acted in the cases to which I have alluded in the preceding paragraph.

To obtain these effects, you must not only apply your counter-irritating liniment to the part of the chest immediately over the diseased part. I attribute much of Long's success to his applying his liniments to the whole chest ; and I have often obtained the best effects from the extensive and regular application of a contra-stimulant, *that had been previously employed in other hands*, for a length of time without the slightest benefit. For reasons that I have already stated, I would not even confine the use of the remedy to the chest, but would apply it to the limbs and greater part of the trunk.

Counter-irritants produce very different effects upon different persons. With some, the mildest liniments produce a copious eruption ; and with others, you can scarcely produce an inflammation of the skin by the most powerful means. The natural conditions of vascularity and sensibility appear to determine these differences. I have observed, however, as I have already noticed, that it is usually in those persons upon whom these agents produce the most marked effects, that their use is attended with the greatest benefit. Not only does the same counter-irritant produce different effects on different individuals, but also on different parts of the same individual ; a circumstance that I sup-

pose to depend upon varieties in the nature of the integument.

It is not a matter of indifference what counter-irritants you should employ. I confess I have found very little benefit from croton oil, in pulmonary affections, a substance so useful in enteric irritations. Tartar emetic ointment is preferable ; but the unpleasant pustules it produces are difficult to heal. I have already recommended to you Albespiere's plasters, for the purpose of producing a suppurating surface, calculated to supplant the pre-existing internal inflammation. But to guard against the recurrence of inflammations ; and to stimulate the general nutritive functions, I know of nothing which has acted in my hands so beneficially, as the liniment of vinegar, and oil of turpentine already described.

Besides the employment of depletion, contra-stimulants, and counter-irritation, I would recommend you to exhibit small doses of opium, or its alcaloids, and Prussic acid : these will serve to diminish fever, by moderating the nervous sympathies upon which it depends.

These constitute the remedies upon which you will have to rely in the pulmonary inflammation of Phthisis. It will be well, if in addition, the atmosphere which the patient breathes, be kept moist, in the manner I have described when speaking of pulmonary irritation. By the careful and steady employment of these means, you will not find it so difficult a matter to conquer this lesion.

But when the pulmonary inflammation is subdued, then comes the question of how you are to ameliorate the existing cachexia. This may be done by the measures I have already recommended, and which will now no longer be interfered with. A sea voyage to the Mediterranean, the use of tonics, eggs, milk, white flesh, combined in due proportion with farinaceous regimen, perfect tranquillity of mind, gentle exercise ; these will all be found serviceable. And if, in addition, you keep up a gentle irritation on the surface, such as I have already recommended, in very many instances, you will be enabled to restore your patient to perfect health. I shall describe two or three cases which have occurred within the last year and a-half to convince you of the possibility of curing pulmonary consumption in this stage.

E—— E——, a tailor, aged twenty-five, has been a teetotaler during the last three years ; unmarried ; he has been ill three months, ascribing his sickness to cold ; his appearance that of a man originally tall and muscular, but now much emaciated and stooping ; of a dark complexion, black hair, brown eyes, and large pupils ; his chest is well formed ; says his illness commenced with gradually increasing weakness and loss of flesh, and a short dry cough ; that eleven weeks since he was attacked with some stitch which caught his breath, in the lower part of the right side ; but it soon left him. He has no dulness nor abnormal respiration in this situation. Six months ago he spit a little blood on two or three occasions, at the same time

he was subject to one or two attacks of chilliness in the course of the day, and copious morning perspirations, principally about the head and arms. These had, however, lately much diminished. His pulse very frequent, his appetite bad, no thirst, bowels regular ; he has slight and comparative dulness under left clavicle, expiration louder and longer, and a minute rale in the inspiration, which is somewhat interrupted in the same situation ; the vibrations of the voice more distinct under right clavicle. This note was taken on the 5th of December, 1842.

He was directed to apply four leeches under left clavicle, and to take a scruple of tincture of colchicum three times a day, gruel and barley-water diet. In two days after he was seen again : the colchicum had not disagreed with him ; a louder rale was heard under the left clavicle ; no appreciable difference could be detected in the dulness. A succession of blisters were now applied over the seat of the dulness, and the remainder of the chest sponged with the turpentine and vinegar liniment. At the same time, he took small quantities of acetate of morphia and laurel-water three or four times daily, and continued the farinaceous diet. This treatment was persevered in, till every trace of rale had disappeared. He was then recommended to take lodgings in the country, which he did at a short distance from Dublin, and to live principally on eggs, milk, and bread, whilst he was to continue the employment of the liniment and the use of the narcotic mixture. After three months of this

regimen, a person who had seen him previously could scarcely be persuaded he was the same individual. He could now walk perfectly upright, had grown strong and muscular, his cough had completely ceased, the pulse had acquired its natural standard, and no abnormal signs could be detected in his chest.

The following case is equally remarkable : J—— W——, aged twenty-eight, an attorney's clerk, of temperate habits. Is somewhat above the middle size ; fair-haired and delicate looking ; is married, and has several children, who are in general healthy. Several members of his family have died of decline. He came under treatment on the 19th of September, 1842 ; the following note was taken November 2nd :—He has slight comparative dulness under right clavicle ; the inspiration in same situation is short and crackling ; the expiration feeble, and of same length as opposite side ; sibilous rales are frequently heard in the site of the dulness, and occasional bubbles of mucous rales. In other parts of the chest no bronchitic rales can be detected, but they have only very lately disappeared, for on the last day he was examined previously (two days before this date), they still continued distinct all over the chest. He was originally cupped over the seat of the dulness, and was put for a few days on *hyr. c. creta* and Dover's powder, after which a seton was inserted under the right clavicle, his chest sponged with the turpentine liniment, and he was given narcotics internally. The dulness, rale, and night sweats have much diminished since the esta-

blishment of the seton. Another note, made on the 10th, states, that the improvement continues. On the 14th, he complains that the cough is more troublesome, from the necessity of expectorating ; the pulse is not more than 90, (it was 110 ;) sweating much less ; says he is much constipated. Ordered the addition of some syrup of squills to his cough mixture, and some cathartic pills. No note till the 31st December. Sputa scarcely any—cough gone—sweats little or none ; appetite good, but is not gaining flesh ; scarcely any difference of resonance on percussion under both clavicles ; sound, however, a little flatter on right side ; no rales.

Subsequently he was considerably thrown back by a smart attack of diarrhœa ; this was checked by acetate of lead and morphia. During the summer of 1843, he took sufficient nourishment, allowed the seton to heal, and continued the sponging. Last October, was carefully examined, and not a shade of dulness or abnormal sound in respiration could be detected. He had gained considerably in strength and fulness ; his muscles having become well developed, at the same time that he did not get fat. And mark, this improvement was effected under the most disadvantageous circumstances, his avocation not permitting him to leave town ; and during the whole course of treatment, he was forced to continue his laborious and harassing employment.*

* This man applied for advice on the 5th of October, 1844, for slight inflammation of the tonsils. He was fat, strong, without cough, and had a quiet pulse.

Sec. 124. Some, perhaps, will say, these cases are mere instances of amendment, but, no doubt, the disease will return, and ultimately destroy the patient. To this I reply, that I cannot foretell what may take place, but that in these and in many similar cases I can find no evidence of disease now—and I know some, the date of whose recovery is so far back as five years, who are still enjoying uninterrupted good health. Some diseases are liable to return, and others not. Contagious diseases are generally in the latter category. Scarlatina, for instance, rarely attacks the second time ; but it certainly would be somewhat rash to say that an individual got a second attack of scarlatina because the first had never been cured. Inflammation of the tonsils is very apt to recur ; are we, therefore, to insist that it is never cured ? It is not difficult to understand, that a person who had once laboured under the Phthisical diathesis would be liable to it again ; nor that a person who had formerly an inflammatory affection of the lungs, would be more especially subject to its renewal. But that is one question, and the question of the curability of Phthisis is another ; and if I find an individual who has had Phthisis manifesting at the present time all the characters of perfect health, why should I, in the face of such evidence and common sense, still continue to maintain that he is labouring under the disease ? Is he not just as much cured as the first case of scarlatina, or the first case of tonsilitis already referred to.

Sec. 125. It is during the stage of inflammation,

which is commonly also that of tuberculization, that night sweats principally torment the patients. These have little or no effect in diminishing the local irritation, while they weaken very much ; this symptom is much exaggerated by constipation. I have never experienced any bad effect from checking the perspiration by a combination of muriate of morphia and dilute sulphuric acid ; nor from obviating the constipation by mild purgatives.

Sec. 126. The fourth stage of Phthisis Pulmonalis is that of induration. This pathological lesion, in itself, can scarcely be considered as coming within the influence of medical treatment. But its consequences, depending on the interruptions to aeration and circulation which it occasions, may to a great extent be kept under controul. You will recollect, that when speaking to you on the diagnosis of induration, that I explained to you, that nearly all the symptoms that occur in its train are the results of the congestion of the lungs and of the liver which it produces. Thus, the dyspnœa, occasional hæmoptysis, &c., are the consequences of the first ; the diarrhœa, anasarca of the extremities, follow the hepatic congestion. The knowledge of these facts will enable you at once to perceive the proper treatment for these symptoms. Local depletion and the administration of astringents, are the means best calculated for subduing these congestions. But as you cannot venture to abstract blood from the patients labouring under the Phthisical cachexia, we fortunately possess a valuable means of local depletion

without the loss of a drop of blood. This is what is called “dry cupping”—the removal of atmospheric pressure from a portion of the surface by means of cupping glasses. This is really a most powerful remedy, producing the most decided derivation from the seat of hyperœmia, and capable of being repeated as often as requisite without injury to the strength. Besides the use of dry cupping, astringents are valuable to increase the tone of the capillaries and strengthen them to resist the pressure of the blood. Catechu, kino, and other vegetable substances containing tonics, are useful for this purpose, and among mineral compounds, acetate of lead is one of the best.

Following these principles, if during the stage of induration, the patient should spit blood and complain of dyspnœa, you may dry cup between the shoulders, and exhibit acetate of lead if the bowels be free, or sulphate of magnesia and dilute sulphuric acid, in large doses, if they be constipated. If, on the contrary, diarrhœa be the prominent symptom, you will find great benefit from cupping over the *liver*, and the use of acetate of lead combined with acetate of morphia, given internally.

You are not to forget, however, that during this stage, attacks of acute pulmonary inflammation are very liable to arise. Now I believe the best way to prevent these, is to establish a constant drain on the surface ; and the best thing I know for the purpose, is a seton over the seat of the induration.

Combine these remedies with mild narcotics to diminish fever, and the means so often pointed out for

restoring the nutritive forces. By a steady perseverance in this course, a very comfortable state of health can at length be obtained : but I shall speak more particularly on this subject when describing the treatment of the fifth stage.

Sec. 127. We have seen that diarrhœa is a symptom often depending upon portal obstruction. It may likewise, however, proceed from local disease of the intestines, which may even precede the pulmonary disease. It is a question, therefore, of some importance for the treatment, to be enabled to recognise the source of the diarrhœa. But, unfortunately, this you cannot do ; for a great majority of Phthisical patients present after death lesions, more or less severe, of the mucous surfaces both of the small and great intestines, whether diarrhœa had existed or not, whether this symptom has accompanied the whole progress of the disease, or only supervened towards its termination. Practically, however, you will seldom fail to check the diarrhœa, by the treatment described in the preceding paragraph.

Sec. 128. The fifth, which is the stage of ulceration and suppuration, is signalized by the tendency to new tuberculization, and by the exhaustion following profuse secretion from the walls of the pulmonary cavities. The treatment is so precisely similar to that of induration, that I shall not occupy your time by repeating it. Occasional dry cupping between the shoulders ; keeping open a constant drain upon the surface ; diminishing fever by means of narcotics ; using astringents to

check excessive secretion ; when cough is harassing, inhalation of the steam of warm water impregnated with some sedative or narcotic substance, such as Conium, Belladonna, or Lobelia inflata, is often found a great comfort in this stage particularly, removing the tightness across the chest so much complained of, the patient feels refreshed after it, and more inclined to sleep than after narcotics given in the usual way. A more minute recapitulation of other remedies will be unnecessary to those who have carefully attended to what I have said in the previous part of this lecture.

I wish to assure you, that even in this advanced period of the disease, the case is not by any means hopeless, in many instances. When the strength still continues after the formation of cavities, when the hectic fever is not very extreme, and is amenable to treatment; you will occasionally be able, for all practical purposes, to cure such patients. I will mention to you some examples of cures effected, even after the formation of considerable cavities.

Phthisis—cavity in upper part of right lung—disappearance of symptoms—signs of cavity still remaining. E—— B——, aged thirty, a widow the last two years and a-half; a teetotaler; was under treatment during the spring and summer of 1842. The right side of thorax very much contracted under the clavicle; in the same situation she had the signs of anfractuous cavities, with those of surrounding induration; had frequent attacks of hæmoptysis; profuse sweating; cough; was much emaciated; and was subject to at-

tacks of diarrhœa. She was treated by meeting the several symptoms, and establishing a seton, which was afterwards removed. In the beginning of 1843 she again applied, in consequence of having caught cold, which brought on a slight attack of bronchitis ; but at that time, she was in other respects a different looking person, having gained flesh, and lost all the distressing symptoms. The signs of dry cavities still remaining, the bronchitis was easily relieved.

Hæmoptysis followed by Phthisical predisposition—inflammation of upper lobe of right lung—induration in same situation—complete relief of the symptoms. A gentleman, a barrister, aged thirty-two, while travelling was seized with hæmoptysis, from which he recovered after the usual treatment. However his voice continued weak, and a slight cough persisted from that time. The following winter having caught cold, the spitting of blood returned in a slight degree, and he began to suffer from flying pains about the chest, together with a more constant expectoration. He continued to lose flesh, felt weaker, and was unable to speak in public. From that time he grew gradually worse, till the time I was called on to attend him. I found him completely emaciated, and so feeble, as to require to be carried from one room to another ; tormented with a hacking cough, expectorating a greyish viscid sputa, mixed with bloody striæ. He complained of a constant pain referable to the right mammary region, and passing out to the point of the scapula behind ; breathing short and hurried ; pulse exceedingly

weak and frequent ; spirits much depressed ; had little or no hope, for several members of his family had died of consumption, and some very lately. On examining the chest, the clavicle on right side appeared a good deal flattened ; there was comparative and marked dulness, down nearly as far as nipple and on spine of right scapula. The respiration in same situation feeble, rough, and mixed with minute rales. Bronchophony, and the sounds of heart heard very loud under right clavicle. From the treatment I have already described to you, this gentleman continued rapidly to improve, and after a period of six months, he was able to resume his usual occupations, and his voice could be heard distinctly by a large audience. It is remarkable in this case, that before I was called in, the liniment of turpentine, together with very much of the means I subsequently employed, had been in use for some time ; and that actually the principal alteration which I made in the treatment (but the alteration to which I think this gentleman chiefly owes his subsequent recovery), was to direct the liniment to be applied over a more extensive space, during longer periods, and in a better manner.

Phthisis—cavities—recovery—disappearance of cavities. Mr. M——, a manufacturer, a remarkably handsome well-made man, about thirty years of age, dark complexion, jet black hair, and dark eyes. Family consumptive. He had been ill two years ; was previously rather dissipated, and accustomed to drink hard occasionally. On examination, the upper and

middle lobes of the left lung were found to give the signs of induration anteriorly and posteriorly ; well marked signs of cavity under left scapula. He laboured under great dyspnœa and confirmed hectic ; expectoration purulent and tuberculous ; no appetite ; much emaciated ; very feeble, but still could walk a little, about the length of a street. The treatment consisted of cupping under clavicles, counter-irritation, and mild tonics ; as soon as he gathered sufficient strength, constant change of air and scene. The signs of cavity gradually disappeared, and he was in some months able to exercise as usual.

Miss ——, a lady apparently over thirty years of age, with light complexion, pale and anæmic, but short and full made ; had not lost much flesh, was naturally a very fat person ; had been ill six months before I saw her. Had slight hæmoptysis ; expectoration occasionally purulent, but mostly grey and viscid, constantly streaked with blood ; cough in fits, more violent in the night and towards morning, which prevented her sleeping, and was the frequent cause of headache ; catamenia had not appeared for several periods ; chest dull on percussion, almost equally under both clavicles ; respiration muffled, and mixed with minute rales ; no signs of cavity ; was subject to perspirations in the day time as well as at night, alternately with cold shiverings ; had not left her room for the last three months. Under treatment the catamenia became regular ; she regained her health, and became a very active person,

and still continues to enjoy uninterrupted health for the last three years.

Phthisis—cavity under left clavicle—removal of all the symptoms. Miss J——, a lady of about twenty-five years of age, of chlorotic appearance ; had not lost flesh ; complained of deranged stomach and alimentary canal for a long period ; catamenia irregular and very scanty for some months ; great oppression of breathing ; hard dry cough ; much muscular debility. On examination, found all the signs of cavity under left clavicle. She was also examined by another physician, who found the same signs ; circulation feeble, frequent, and irregular ; had a firm persuasion she could not recover, a circumstance rather unusual with the consumptive. Under treatment all the symptoms disappeared ; but I have not had an opportunity of ascertaining whether the signs of cavity have been removed.

I have given you the foregoing cases nearly as I find them in my note book, without any attempt at mending them to meet my own views. If I had known their importance whilst under my care, and in what manner they would have terminated, I would have noted them with greater accuracy. But it is useless now in indulging in regrets. And at least they are sufficient for the purpose I bring them forward—that you should never despair of a case of Phthisis ; and that the worst are capable of great alleviation, if not cure.

Sec. 129. I approach the close of these Lectures

with the deep conviction of how much I have failed in conveying to you a complete history of the pathology, diagnosis, and treatment of Phthisis Pulmonalis. The vast extent of the subject, its extreme difficulty, and the necessity of keeping within due limits, must be my apology. If, however, I have succeeded in bringing before you more just views of the nature of this disease, if I have in any degree rendered the diagnosis of its several stages more facile, and chiefly if I have pointed out in a more exact manner than heretofore, the indications of its treatment, I feel that the labour of many years has not been vainly spent. All I sincerely desire is, that the facts which I have brought before you may cause you to be hopeful as to the result in those you are called upon to treat ; for I feel assured, that it will be in your power to rescue many from premature graves, by a steady and rationally sanguine perseverance in correct treatment.

APPENDIX.

FROM the nature of the foregoing lectures, I have been prevented from entering minutely into many disputed questions with respect to the pathology, diagnosis, and treatment of Phthisis. I shall endeavour to supply these omissions to some extent in the following pages ; at the same time that I will leave many others, which I consider of minor practical importance, without further notice. A vast deal of dispute has been entered into, and voluminous controversies been carried on, with respect to many points in the history of this disease, which, if even determined, will not have the slightest influence on its recognition or cure. For the facility of reference, I shall divide the subjects treated in this appendix under separate heads.

INFLAMMATION THE EXCITING CAUSE OF PHTHISIS.

The opinion, that inflammation is the exciting or immediate cause of the development of tubercles, has, at the present day, many very influential opponents. Of these, Sir James Clarke, M. Louis, and M. Grisolle, are the chief. Sir James Clarke, in his admirable

work on Phthisis, hesitates and doubts as to the *role* which inflammation may perform, rather than denies its influence. He even appears to think, that if the tubercular cachexia be present, the occurrence of inflammation may in many instances be the last link in the chain of causation ; the immediate precursor, at least, of tubercular deposition. M. M. Louis and Grissolle are, however, determined opponents of the doctrine ; and it will be well to examine the grounds of their dissent.

“ Of eighty Phthisical subjects,” says M. Louis, “ whom I carefully examined respecting all diseases “ they had suffered under, previously to the outset of “ the tuberculous disease, three had pneumonia four “ years before death, and from that time they had “ coughed and expectorated uninterruptedly ; four “ others had had the same disease three, six, and fifteen “ years before the manifestation of the first symptoms “ of Phthisis, without having been more subject to “ cold within these periods than before, and without “ having suffered from dyspnœa : all were of weak “ constitution and lymphatic temperament—two of the “ principal conditions regarded by practitioners as “ predisposing to Phthisis. These cases are mutually “ subversive ; and if any inference at all be deducible “ from them, it is, that pneumonia is without influence on the development of Phthisis.”

He proceeds to observe, “ Not only do the observations “ referred to, signally fail in proving that pneumonia “ is a cause of tubercles, but the history of this inflam-

“ mation appears to me to demonstrate the precise
“ contrary. In truth, pneumonia most commonly
“ spreads from the base to the apex of the lungs
“ (Bayle), and the development of pulmonary tuber-
“ cles almost invariably follows the opposite direction.
“ Pnuemonia rarely co-exists on both sides of the
“ chest ; Phthisis almost invariably implicates both
“ lungs. Phthisis is less frequent in males than
“ females—the contrary is the case with pneumonia.
“ Of seventy-five pneumonia patients, observed by my-
“ self, twenty-three only were females. Eighteen of the
“ number died ; and of these, fifteen were men, three
“ only women.”

In speaking of pleurisy, he remarks, “ The same
“ reflections are, in great part at least, applicable to
“ pleurisy. I have observed this affection more fre-
“ quently in males than females, though not with so
“ much greater frequency as pneumonia ; it implicates
“ only one side of the chest, whereas it is very rare to
“ find pulmonary tubercles in one lung only. I may
“ remark here, that having given my attention parti-
“ cularly to this point since the publication of my for-
“ mer edition, I have found pleurisy, when it attacked
“ individuals in the actual enjoyment of good health,
“ and free from symptoms of disease of any kind at the
“ moment of attack, invariably terminate by the reco-
“ very of the patient. Nor did it leave after it any
“ trace of disease, neither cough nor emaciation—
“ nothing, in a word, justifying a suspicion of the exist-
“ ence of tuberculous affection, even in the latent form,

“ of the lung. This statement is founded on the obser-
“ vation of nearly two hundred cases of simple uncom-
“ plicated pleurisy which have fallen under my notice
“ within the last fifteen years. Hence the really im-
“ portant point, as a guide to correct prognosis in
“ cases of pleurisy, as of numerous other affections, is
“ to ascertain carefully the state of the lungs and
“ other viscera, at the moment the invasion of the
“ inflammation takes place. If they be healthy, and the
“ patient labour under no other malady, the prognosis
“ is favourable.”

When discussing the influence of pulmonary catarrh on the development of tubercles, M. Louis states,—
“ The influence of pulmonary catarrh on the develop-
“ ment of tubercles, does not appear to me to be more
“ satisfactorily demonstrated than that of pneumonia.
“ Of the eighty patients who were enabled to give me
“ an account of the diseases they had suffered under
“ previously to the outbreak of Phthisis, twenty-three
“ only were subject to attacks of pulmonary catarrh ;
“ while fifty-two, or about two-thirds of the whole
“ number, were rarely so affected. What conclusion
“ can we possibly draw from these facts, but that
“ Phthisis occurs indifferently in persons subject to
“ pulmonary catarrh, and in those who are not prone
“ to suffer from it ; and consequently, that we cannot
“ consider it as one of the effects of the latter affec-
“ tion, or connected with it by any obvious tie.”

“ The same conclusion,” he continues, “ is forced
“ upon us by another order of facts. Females who,

“ according to my observations, appear more exposed
“ to Phthisis than men, are less subject to pulmonary
“ catarrh, at least to pulmonary catarrh sufficiently
“ severe to induce the patient to seek medical aid.
“ Thus, of one hundred and forty-nine cases of this
“ affection, collected by me before 1825, fifty-two only,
“ or about one-third, were furnished by females.

“ Hence, whether we examine inflammation of the
“ pulmonary parenchyma, or that of the mucous mem-
“ brane of the bronchi, in connection with Phthisis,
“ we arrive at the same conclusion, namely, *that the*
“ *sex which appears the more prone to Phthisis, is*
“ *the less subject—in the proportion of 1 : 3—to*
“ *both those inflammations.*”

“ It is obvious, that no mere arguments, however
“ specious, can henceforth warrant the idea, that pul-
“ monary tubercles are the result of chronic inflam-
“ mation of the bronchi, the tissue of the lung, or
“ the pleura. The proposition I have stated cannot be
“ overturned, except by a series of facts more nume-
“ rous than those I have collected, and proving that
“ the proportions existing in my cases were the effects
“ of chance.

“ And if, in opposition to all probability, it were
“ urged that the difference in proportion of Phthisical
“ subjects in the two sexes was too inconsiderable to be
“ of any real weight, my statements would still not the
“ less hold good ; inasmuch as there would, even then,
“ be no relationship between the frequency of Phthisis

“ and of pulmonary catarrh, or pneumonia, in the
“ male and female.

“ And were it even proved to demonstration, by a
“ series of well-observed cases, that these two affec-
“ tions exercise a direct influence on the development
“ of Phthisis, it would not even then have been shown,
“ that they are its necessary cause—that without one
“ or other of them, Phthisis cannot exist. My cases
“ of acute Phthisis appear to me to prove the precise
“ reverse of this. The first of them relates to a young
“ woman subject to colds, who had never had pneu-
“ monia, and was perfectly well at the time when she
“ was seized with rather sharp fever, soon followed by
“ cough and expectoration. She died on the thirty-
“ fifth day of her illness, and a large mass of tubercu-
“ lous matter was found at the base of one of the lungs,
“ softened, and partially evacuated, grey semi-trans-
“ parent granulations, &c. It is evident that the gra-
“ nulations and tuberculous matter, were not, in this
“ case, the effects of inflammation of the bronchi. To
“ justify us in maintaining such an opinion, we should
“ first have proved that the bronchitis of a day may
“ give rise to the formation of tubercles, &c. But I
“ have too much respect for my readers to suppose
“ them capable of holding such an opinion, or others
“ equally improbable; and I consider it as clearly
“ demonstrated, as any thing can be, that in the case
“ in question, the development of Phthisis was inde-
“ pendent of inflammation of any kind. The other

“ cases of acute Phthisis, speak quite as clearly as this.
“ I may refer in particular to Case xxxviii, referring
“ to a man who generally enjoyed good health, and
“ was suddenly seized, without assignable cause, in
“ the midst of perfect health, with fever, followed by
“ cough, and who died on the thirtieth day of his ill-
“ ness. The lungs were found filled with an immense
“ quantity of grey semi-transparent granulations,
“ while the mucous membrane of the bronchi was
“ *perfectly healthy*, with the exception of a slight
“ violet discoloration, which could only be ascribed
“ to stasis of blood occurring during the last moments
“ of life, and is frequently observed in cases of sudden
“ death. I may also recall to the reader’s recollection
“ Case xl., relating to a young man, aged nineteen,
“ who was in the enjoyment of good health, when he
“ was seized, without any known cause, with cough
“ and fever, and in whom enough tuberculous matter
“ had accumulated in the lungs by the twentieth day,
“ to render the percussion sound dull. I might say
“ the same of Case xli., and more especially of Case x.,
“ in which the sound was dull under the right clavicle,
“ on the seventeenth day of illness ; although, in this
“ latter case, the affection did not advance so rapidly
“ to its fatal termination. In fact, of one hundred and
“ twenty-three subjects, six (the twentieth part of the
“ whole number), afforded so many direct proofs, that
“ Phthisis may be developed, independently of any
“ inflammatory affection of the pulmonary parenchy-
“ ma, or of the mucous membrane of the bronchi.

“ And the same inference is deducible from almost
“ all my cases of latent Phthisis. The individuals
“ referred to in Cases l., li., and lii., were affected
“ with simple Phthisis. In them, cough and expecto-
“ ration had been preceded, for six months, or a year,
“ by continued fever, of more or less perfectly remit-
“ tent type ; and in consequence of the absence of
“ complications, we saw that this fever could not be
“ otherwise than the result of the action of a certain
“ number of pulmonary tubercles, developed indepen-
“ dently of pneumonia or catarrh, inasmuch as neither
“ of these affections existed at the time. In support
“ of this assertion comes also Case iv., in which cough
“ and expectoration did not set in till the fourth month
“ of intense diarrhœa, and not until six weeks before
“ death. Here, in truth, the size and structure of the
“ pulmonary excavations showed, beyond the possibi-
“ lity of doubt, that the tuberculous matter was deve-
“ loped before cough commenced. The latter, then,
“ was the effect and not the cause.

“ Thus not only is any influence on the part of
“ pneumonia, pleurisy, and pulmonary catarrh, on the
“ development of Phthisis not demonstrated, but my
“ cases incline to show, that such influence is either
“ imaginary, or that if it exists, its amount is exceed-
“ ingly limited. I have, as it appears to me, just
“ proved that in the twelfth part of the cases which fell
“ under my notice, the formation of tubercles took
“ place independently of inflammation of the tissue of
“ the lungs, of the pleuræ, or of the bronchi.

“ However, it must be admitted, that in consequence
“ of the slow progress of Phthisis in the majority of
“ cases, of the resemblance of its initiatory symptoms
“ to those of simple pulmonary catarrh, and of the
“ more or less inflammatory state of a part of the
“ bronchi in Phthisical subjects, it is not surprising
“ many medical men should believe that inflammation
“ (more especially that of the mucous membrane of
“ the bronchi) is the cause of tubercles. But this
“ opinion, as we have already seen, cannot, at least in
“ the majority of cases, it appears to me, be any
“ longer maintained.

“ There is, besides, another fact, not less certain
“ than those which precede—one that corroborates, and
“ might to a certain extent replace them all: it is,
“ that, as I have elsewhere said before, *the bronchi are*
“ *commonly healthy* near crude tubercles, or masses
“ of grey semi-transparent matter; so that the red
“ discoloration and thickening of those in communica-
“ tion with the tuberculous cavities, would appear to
“ be effects of the constant passage of the contents
“ of those cavities. I may add, that in subjects who
“ die from some other affection than Phthisis, but yet
“ have crude tubercles, or grey granulations in the
“ lungs, the bronchi are almost always found perfectly
“ healthy, in respect of colour and thickness. Facts
“ of this kind are not rare. I have lately even
“ observed several of the kind; and it is enough to
“ have seen one, to feel convinced of the frequent inde-
“ pendence of pulmonary tubercles of inflammation.”

“ The additional investigations upon which I have
“ entered since the publication of the former edition
“ of this work, have corroborated the results of my
“ first inquiries, and rendered the conclusions which I
“ had deduced from facts, still more sure and evident.
“ Thus, all the cases of acute Phthisis I have analysed,
“ supplied so many examples of a perfectly healthy
“ state of the bronchi, even of those of the apices of
“ the lungs. In forty-two post-mortem examinations
“ of individuals affected with vesicular emphysema of
“ the lungs, I found only ten cases in which a small
“ number of grey semi-transparent granulations ex-
“ isted at the apex of those organs—a proportion
“ lower than that found by myself in individuals cut
“ off by all diseases indiscriminately, and who had not,
“ like persons labouring under vesicular emphysema,
“ suffered from more or less intense pulmonary catarrh
“ for a series of years. I may add, that in the ten
“ cases in question, the tubercles were not more
“ advanced, nor more numerous, when the emphysema
“ was most marked and of oldest standing, than in the
“ others—an additional proof of the independence of
“ tubercles of pulmonary catarrh. Lastly, I have
“ collected eleven cases of dilatation of the bronchi in
“ subjects who appeared to have laboured under this
“ affection for a space of time, varying from two to six
“ years at the time of death ; in eight of them the
“ mucous membrane of the bronchi was, besides being
“ triple or quadruple the natural thickness, of intense
“ red colour, granular-looking, or mammillated ; and

“ in three only of the eleven subjects, did tubercular
“ complication, and this in an advanced state, exist.

“ Another fact, not less important than the preced-
“ ing ones—though it be not supplied by morbid ana-
“ tomy—is, that acute pulmonary catarrh of any
“ intensity, and which is seated in the ultimate bron-
“ chial ramifications, commences at the base of the
“ lungs : this is a rule, to which I have not met with
“ a single exception since I first, now ten years past,
“ ascertained its existence.

“ Is it possible, that in the teeth of facts so nume-
“ rous, so easily established, and so unanimous, to
“ maintain that inflammation of the mucous mem-
“ brane of the bronchi is a powerful or common cause
“ of Phthisis ?”

I have been thus particular in quoting all the arguments brought forward by M. Louis on this subject, partly on account of the inherent importance of the origin of tubercle, and partly on account of the great and deserved celebrity of M. Louis. The extreme care with which M. Louis has collected and described a vast number of cases of pulmonary consumption, and his well-known accuracy as a pathologist, invest his opinions with an authority which must possess the most extensive influence either for good or evil. It is, therefore, with the most profound respect that I approach the examination of his recorded conclusions, and nothing but the extreme importance of the subject ; vitally connected as it is with the treatment of Phthisis, could have induced me to venture on the critical

examination of his views. Convinced, however, as I am, from a careful study of the cases published by himself, that his data are not only insufficient, but even at variance with the deductions at which he has arrived, it is, I conceive, more respectful towards that eminent physician, that I should describe in detail the reasons why his arguments have failed to convince me, rather than pass them over in silence. But that the reader may have all the means necessary for his own conclusions, I have extracted from the last edition of M. Louis's work nearly all that appertains to the influence which inflammation exerts over the production of tubercles.

M. Louis considers, that it is impossible to maintain that inflammation is a powerful or common cause of Phthisis. But in his treatment of this subject, he seems to me to have fallen into the sophism which the logicians call "*ignoratio elenchi*;" that is, he has proved a thing which has no necessary connection with, and, therefore, does not determine the question. The question is, are tubercles a result of *an* inflammation? M. Louis proves, that plastic or suppurative inflammations do not give rise to the deposition of tubercles; and therefore he draws the conclusion, that tubercles do not arise from *an* inflammation. If inflammation was a thing capable of an exact definition, having always the same anatomical appearances, accompanied by the same vital aberrations, and characterised by the same alterations of functions, this conclusion might be justified. But pathologists know

that the word "inflammation" is, on the contrary, very vague in its interpretation ; is intended to express extremely varied combinations of lesions ; and differs very much in its results under various circumstances. Sometimes inflammation produces softening, at others induration ; sometimes inflammation causes the secretion of pus, at others coagulable lymph ; nay, mere congestions from atony or venous obstruction, have been called passive or asthenic inflammations. If M. Louis succeed, therefore, in proving that ordinary pneumonia, pleurisy, or bronchitis, terminate in the majority of instances, without the development of tubercles, we may admit the truth of his deductions, and yet remain as much as ever in the dark, as to whether tubercles are a result of *an* inflammation.

Let us imagine a student observing the practice of a thronged dispensary. He sees a great number of children afflicted with opthalmia ; he remarks, that in them the conjunctiva is reddened by bundles of dilated blood-vessels arranged in fascicles, which terminate at distinct vesicles upon the cornea or sclerotica, and he sees that the tears are transparent. By and by, he recognises similar redness of the conjunctiva in an adult ; but the redness is more diffused, there are no vesicles apparent, and the secretion is purulent. If told that the latter was a conjunctivitis, would he be justified in concluding that the former was not an inflammatory disease ? Is it likely that he would reason, that because the latter occurred in an adult, that it caused the tears to be milky instead of trans-

parent, and was unaccompanied by phlyctenæ ; that it was a disease differing toto cœlo from that which occurred in so many children ? On the contrary, would he not recognise a great similarity between the two cases, and justly ascribe the apparent differences to the variation of accompanying circumstances ? Yet M. Louis argues, that because pneumonia, or catarrh, occur more frequently in men than women, and are apt to commence at the base of the lungs in the great majority of instances, that, therefore, tuberculization which is more frequent in women, and commences in the summits, is not the product of an inflammation. The answer to this argument is, that tubercular inflammation differs in seat, and other accompanying circumstances, from plastic or suppurative inflammations, simply, because it is *tubercular* inflammation, and not either of the latter.

M. Louis places great reliance on six cases of acute Phthisis which he had observed among one hundred and twenty-three subjects, as so many direct proofs that Phthisis may be developed independently of any inflammatory affection of the pulmonary parenchyma, or of the mucous membrane of the bronchi. He has himself furnished us with the details of those cases, and thus given us the means of judging as to the accuracy of his deductions. He cannot blame me, therefore, if I examine their history for myself, and see whether they will bear the construction which he puts on their phenomena.

The first was the case of a girl, aged eighteen, not

subject to colds, and who had enjoyed, generally speaking, good health. The catamenia, however, which had been previously regular, had not appeared for three months. M. Louis does not mention what symptoms accompanied this suppression, so that we cannot tell whether she had chlorosis, or a subacute metritis. At the time of her admission into La Charité, she had been professedly only fifteen days ill ; but it is not to be forgotten, that she had suppression of the catamenia for three months. Well, it is said, that the invasion of her illness was marked by rigors, with trembling, followed by heat and perspiration. The rigors recurred several times subsequently ; the heat of skin continued more or less considerable ; and there was considerable thirst. Nausea occurred from time to time ; and still more rarely, the patient vomited a few mouthfuls of bile. She had completely lost her appetite, and frequently suffered from constipated bowels ; her strength failed as the other symptoms became more severe ; and on the *tenth* day of the disease slight cough came on, with expectoration of a few sputa.

We here learn that she was attacked with pyrexia, loss of appetite, prostration, and cough ; but from the imperfect history of the case, we cannot tell on what diseased condition of the system this feverish attack may have supervened. Upon examining her chest, universal sonorous ronchus was discovered, and she had pain behind the sternum and under the left clavicle ; the pulse 103, neither full nor hard. It is evident, that bronchitis had now complicated the origi-

nal fever. On the twenty-second day of her illness a good deal of mucous ronchus was audible on the right side ; and on the twenty-fifth day some crepitation was perceived round the mamma, with the respiratory murmur stronger than on the other side. On the thirty-fourth day a sort of humid clicking noise accompanied each respiration, over almost the entire anterior surface of the chest ; a little crepitation on the left side.

The frequency of the pulse increased daily. On the thirty-second day it had reached 174 in the minute ; the skin very hot and dry ; perspiration every night regularly until the twenty-eighth day.

She had slight epigastric pain, and occasional diarrhœa during the last seven days. Some delirium on the day before her death, which occurred on the thirty-fifth day from the commencement of the feverish attack.

It seems to me, that if M. Louis wished to bring forward a case strongly corroborative of the opinion, that inflammation is the cause of tubercle, he could not select a better than the foregoing. A girl is attacked with fever ; has been evidently in disordered health some time previously ; gets bronchitis on the tenth day of the fever, and tuberculization of the lungs rapidly commences. But M. Louis says, that the fever was originally caused by the development of tubercles. What proof is there of any such thing ? Until the tenth day, she did not present the slightest evidence of chest disease ; neither cough, nor pain, nor expectoration. And if he finds a difficulty in

understanding how extensive tuberculization could take place in twenty-five days, the explanation is not much facilitated by extending the term to thirty-five days.

The next case of acute Phthisis described by M. Louis is the following. A teacher of the piano, aged forty-six, of middle height, strong constitution, broad-chested, and rather stout, was admitted into the hospital of La Charité on the 6th of October, 1823, having been then three weeks ill. This illness commenced without assignable cause, after a moderate meal, by trembling, soon after followed by heat ; and the latter had ever since continued more or less marked. After the first thirty-four hours, difficulty of breathing was felt ; this dyspnœa made constant progress, and from time to time slight cough occurred. For the last eight days he had suffered from urgent thirst, and had totally lost his appetite. No painful sensation at the epigastrium, nausea, or vomiting ; bowels confined.

October 7th. Present state—Expression of combined uneasiness and apathy in the face ; answers slow ; headache ; respiratory movements confined and frequent ; considerable oppression of breathing ; he coughs seldom ; a few mucous sputa containing a little air ; weak respiratory movement without ronchus under the right clavicle, natural elsewhere ; skin moderately hot ; pulse 80 ; tongue yellowish in the centre, natural at the edges ; anorexia ; no great thirst ; sensation of heat and dryness in the pharynx ; deglutition easy ; no epigastric pain ; bowels confined.

8th. The sputa being slightly viscid, he was bled to about ten ounces.

9th. Expectoration less viscid ; breathing very much as on the first day ; results of percussion and auscultation as before ; tongue somewhat red at the edges ; considerable heat and dryness of the pharynx ; the latter and the tonsils rather bright coloured ; dysphagia ; thirst moderate ; skin hot ; pulse 104. The blood drawn the previous day, covered with a slightly greyish buff about a line thick.

10th. Skin somewhat less hot, and pulse a little slower than the previous day.

11th. Sputa slightly viscid, white and aerated ; respiration as on the 9th ; no crepitation audible anywhere ; sound under percussion *clear in every situation* ; pulse 96, rather weak ; pharynx and tonsils as before ; general uneasiness increased ; movements unsteady and troublesome to the patient. Two liquid stools.

12th. Pulse somewhat less frequent ; face expressive of depression ; speech slow ; uvula œdematous ; the patient only complains of inconvenient heat in the pharynx and along the neck.

No appreciable change on the following day. On the 14th a sort of bellows' sound was heard pretty extensively in the chest ; sputa viscous, white, and greyish ; pulse very frequent ; tongue hard, dry, and cracked ; heat of pharynx as before, that tube, as well as the uvula, somewhat less marked than usual ; uneasiness and distress increased ; entire face red ; slight

delirium in the night. The patient expired at 10, A.M., on the 15th.

He had two liquid stools daily, but been free from abdominal pain ; the head was inundated with perspiration every night.

At the autopsy, the epiglottis was found destroyed on the left side, to an extent of two lines in width and something less in breadth. The mucous membrane of the trachea bright red at its lower part, and of good consistence. The lungs large, more or less violet-coloured. Left lung free from adhesions ; some feeble adhesions on the right side. Tissue red and granular in the greater part of their extent, friable on the right side only, firmer at the apex than the base, furnishing on pressure a thick fluid of the colour of lees of wine, containing a little air in the inferior part of the organ. Both contained a multitude of semi-transparent granulations, the size of which decreased from the upper to the lower part of the lung, they were opaque and yellowish in the centre, as large as a hemp-seed towards the apex, as a millet-seed and perfectly semi-transparent towards the base. Bronchi thin ; their mucous membrane healthy, except that it was violet-coloured, much as is usual in subjects where respiration has been obstructed for a considerable time before death. Heart somewhat soft ; a few yellowish patches in the aorta.

The foregoing case is evidently very obscure. That pulmonary inflammation was suspected at a very early period, is shown by the patient's being bled the second day after his admission into hospital. Extensive soli-

dification of the lung was found after death, and it was not at all detected during life. The next case, however, is calculated to throw some light on the nature of the preceding.

This was the case of a water-carrier, aged thirty, of tolerably strong constitution, generally enjoying good health, with the exception of occasional colds of short duration. His father and mother were still living, the one aged seventy and the other eighty. He very rarely committed any excess in wine, and had been fifteen days ill, the last four of which he had kept his bed. Upon strict inquiry into the state of all the functions previous to that period, it appeared that they had been in a perfectly natural state. The outset was marked by a violent attack of rigors, with trembling, which recurred occasionally afterwards, considerable heat of skin between these attacks of rigors, on rare occasions slight sweating, and incessant cough. He had completely lost his appetite for the same length of time, and had two liquid stools daily, without cholic, or epigastric pain ; increasing failure of strength was noticed from the first, and his extreme weakness was the cause of his having kept his bed for the last four days.

January 24th. *Present state*—After a somewhat restless night, with quiet delirium, M. Louis found the patient's face red, slightly expressive of bewilderment and stupor ; the eyes brilliant, and slightly injected ; the hearing good, without any buzzing in the ears ; legs and loins somewhat painful, as from the outset ;

intelligence in good condition ; tongue natural at the edges, reddish and villous in the centre, moist over the entire surface ; mouth clammy and bitter tasting ; appetite completely gone ; thirst urgent, although cold liquids were insupportable to the patient ; abdomen free from pain, naturally shaped ; skin rather hot ; pulse 104 ; sputa small in quantity, contain a good deal of air, without being viscous ; the respiratory murmur presented no evident deviation from its natural state, on the right or left side anteriorly.

Now if such a case as this presented itself to a practitioner in this country, I think he would not hesitate in calling it ordinary fever. A man previously in the enjoyment of good health gets a rigor, followed by burning heat of the skin with slight perspiration, pains and soreness all over his body, suffusion of the eyes, prostration of strength, cough, muttering delirium, countenance stupid and bewildered, without any evident local lesion to account for those symptoms.

Well, the patient was that night restless, talking a good deal, not loudly, however. Blood drawn yesterday not buffed ; respiration gasping ; sputa as before ; on both sides posteriorly in the inferior third of the chest, and all round, rather fine crepitant ronchus is heard ; the patient complained of pain in the throat, and the velum palati was red and dry ; the limbs became the seat of involuntary movements, when not stretched out on the bed at full length, in other words, he had what we call (very improperly) “*subsultus tendinum* ;” several liquid stools in the course of the day.

The following night the patient was so restless, that the straight waistcoat was put on. On the 26th, in the morning, he was still delirious, made no answers to questions put to him, was indignant at being treated as a madman, and not being allowed to attend to his business. Respiration deep and frequent ; fine crepitation in the lower three-fourths of the left side, but limited to a surface by half less extensive ; tongue brownish coloured with whitish striæ.

Bleeding to nearly thirteen ounces ; sinapsims. Shortly after the bleeding had been performed, the patient tore away the dressings, and about seven ounces and a-half more blood were lost.

The delirium continued, however, notwithstanding ; and on the 27th, the patient, still capable of telling his own name, had difficulty in remembering that of the street he lived in. He affirmed that he had no pain any where. Spasmodic movements in the limbs from time to time ; pulse 120, regular ; skin hot ; respiration very frequent ; crepitation as before ; percussion furnishes a clear sound ; tongue somewhat dry, not hard ; abdomen yielding and natural in shape.

Twenty-four leeches behind the ears ; ice to the head ; sinapisms to the lower extremities.

The ice was kept on the head part of the day, and a good quantity of blood drawn by the leeches ; but the delirium did not appear modified for one instant by either. The patient uttered cries part of the night.

28th. Continual spasmodic movements in the limbs for the last three hours ; eyelids closed, even when he

tried to stammer out some replies to the questions put him ; tongue soft and natural in colour, though dry, he had great difficulty in protruding it beyond his teeth ; crepitation as before, and audible in front as well as posteriorly.

Whey ; ice to the head.

He became somewhat less restless in the course of the day. On the 29th he had been freed from the straight waistcoat ; the face red, and strongly expressive of bewilderment ; he put out his tongue tolerably well—it was whitish in the centre and natural on the edges ; he stated in a confused manner that he had no pain any where ; the spasmodic movements were less marked than before ; percussion of the chest still perfectly sonorous, anteriorly and laterally. Posteriorly on the right and left sides, humid sub-crepitant ronchus without vesicular respiration, but mixed with fine crepitation ; the latter existed also anteriorly on the left side, where it was rather abundant ; pulse more frequent than usual.

The patient expired at 6, P.M., without having had any alvine evacuation, but having passed a considerable quantity of urine, and laboured under increasing embarrassment of respiration.

It is unnecessary to quote the lengthened details of the post-mortem ; suffice it to say, that the principal lesions were found in the chest, consisting of tuberculated false membranes in the pleura, innumerable granulations throughout both lungs ; the intervening pulmonary tissue red, and friable exuding a red frothy

liquid, but not granular ; there were some small tuberculous cavities in the summits of both lungs. The heart was very soft.

Now I think, that this case throws much light upon the former ; in fact, they were both instances of typhus fever, with pulmonary complication, and terminating in tuberculization. They are examples of no uncommon form of disease ; and by those who have studied the previous portions of this work, they will be easily enough understood. The poison of fever, by its depressing influence, produces a true tubercular predisposition, which the excessive depletions used in these cases were by no means calculated to diminish ; and a pulmonary inflammation occurring under such circumstances, must necessarily take on a tuberculous type. But M. Louis thinks there was no inflammation originally in these cases, and that the pneumonia which was the immediate cause of death, was produced by tubercles already existing. No inflammation in the commencement of these cases ! Why, what produced the cough, the dyspnœa, and expectoration ? If M. Louis says these were produced by the presence of the tubercles, these bodies could only give rise to the symptoms mentioned by exciting inflammation in the surrounding tissue ; so that to produce the symptoms, an inflammation of some kind must be supposed. And I have as good a right to imagine this inflammation to be the cause of the tubercles, as M. Louis has, to look on the tubercles as the cause of the inflammation. See how early, symptoms of pulmonary inflammation pre-

sented themselves : in the one case, thirty-four hours after the rigor ; in the other, along with the attack. Would M. Louis have us to suppose, that the tubercles became deposited still earlier ? Then we would be forced to admit, that tubercles may develop themselves suddenly, and in any quantity, in an individual previously perfectly healthy, and without any cause. I cannot believe that M. Louis can seriously entertain such a pathological absurdity.

It is unnecessary to pursue this subject any further. From what has been said, it may strike the reader that M. Louis has been somewhat too sweeping in his assertion, that “all his cases of acute Phthisis are so many direct proofs, that Phthisis may be developed independently of any inflammatory affection of the pulmonary parenchyma, or of the mucous membrane of the bronchi.” If he had confined his statement to the enunciation, that tuberculous inflammation differed in kind from ordinary pneumonia, or bronchitis, I am fully prepared to agree with such a proposition. But I confess, that a careful examination of his cases of acute Phthisis, only serves to confirm me in the persuasion, that a peculiar inflammation always accompanies and produces tubercular secretion.

I cannot omit alluding, however, to M. Louis's forty-third case, as it is of a kind often calculated to puzzle pathologists. It is that of a young girl who had formerly laboured under Phthisis, of which she had been cured, and the diathesis removed. She subsequently got ordinary pneumonia, which was likewise cured. And the apparent difficulty consists in the fact, that

this pneumonia had no influence on the original signs of tubercular deposition. The difficulty becomes at once resolved when we reflect, that it is the state of the constitution makes all the difference. When she had tubercular cachexia, pulmonary inflammation gave rise to Phthisis ; but when the cachexia was removed, pulmonary inflammation assumed a plastic character.

But M. Louis not only asserts that his cases of acute Phthisis prove the non-inflammatory nature of the disease ; but also that his cases of latent Phthisis are equally good evidences that inflammation has no influence in the production of tubercles. The question is one of too much practical importance to leave a single argument used by so eminent a pathologist unexamined. I shall, therefore, call the attention of the reader to a critical examination of these cases ; when we will find them, instead of proving the non-inflammation of tubercles, furnishing the strongest testimony to their inflammatory origin.

The first case of latent Phthisis is the following :—
“ A woman, aged thirty-two, endowed with much intelligence and memory, of middle height, and of rather strong constitution, was admitted into the hospital of La Charité, on the 9th of November, 1822. She was not subject to cold, stated that she had been three years ill, and much worse for the last two months and a-half. Rigors, followed by heat and perspiration, occurred at the outset ; and from that period up to the last three months, returned every day at about one o'clock in the afternoon ; the appetite failed at the

commencement, and had not returned subsequently ; she suffered from considerable thirst, and was losing flesh. *No other symptoms occurred in the course of the first year. At the beginning of the second,* cough set in, accompanied with expectoration of clear sputa, which had, within the last three months, become more or less thick and nummulated. The patient had kept her bed for nine weeks, and suffered from slight diarrhœa for a month, when she fell under my observation for the first time.

“ November 10th. *Present state*—Organs of sense and intelligence unaffected ; last stage of marasmus ; respiration moderately hurried ; cough not troublesome ; sputa nummulated, dirty coloured, of slightly pink tint, the majority of them diffluent ; the chest emitted no sound under the clavicles, especially the left, to a considerable distance downwards. In these parts the respiration was tracheal, and pectoriloquy evident ; the same phenomena existed posteriorly in the corresponding regions ; the pulse was small, weak, regular, and frequent ; the body of natural temperature in the day time, very hot at night ; perspiration limited to the head and chest ; tongue natural ; mouth clammy ; thirst not troublesome ; complete anorexia ; deglutition difficult ; sensation of heat and dryness in the throat, as for the last two months ; abdomen somewhat tender under pressure. Three stools the previous day, consisting almost solely of mucus. Considerable weakness.

“ No appreciable change took place the following

days, and on the 18th of the same month, the patient expired after a few hours' struggle.

“*SECTIO CADAVERIS—forty-eight hours after death. External appearances—*Nothing remarkable. *Head—*Arachnoid thick, somewhat opaque near the longitudinal sinus over a surface two inches and four lines broad, adhering in some parts of its surface to the dura mater ; partial and very slight sub-arachnoid infiltration ; two small table-spoonfulls of serosity (turbid on the right side) in each of the lateral ventricles.”

Epiglottis, larynx, and trachea, not examined.

“*Chest—*Strong cellular adhesions at the apex of the right lung ; the left perfectly free from adhesion. Upper lobe of both extremely friable, containing a multitude of small excavations, communicating with each other, and lined with false membrane ; in the spaces between them, semi-transparent granulations existed in considerable number, with a little hepatized tissue. The lower lobes were healthy. Heart of proper size ; walls of the left ventricle attenuated, those of the right manifestly thickened ; both of rather considerable consistence. Aorta shaded with pink in several places ; otherwise perfectly healthy.

“*Abdomen—*Size of stomach natural ; mucous membrane pale, without the least lividity, of proper thickness and consistence. Duodenum healthy. Tuberculous granulations in the lower part of the small intestines ; several of them slightly ulcerated ; on others, which were not softened, the mucous membrane was perfectly healthy. Mucous coat of the large intes-

tine somewhat softened near the cœcum, where it presented small ulcerations, from one to two lines in diameter, without tubercles. Nothing remarkable in any other part of its extent. Mesentery and abdominal viscera natural."

Those who have read the preceding part of this book, will find no difficulty in understanding the foregoing case. It is, in fact, an excellent exemplification of the principles therein developed. This woman laboured for a year under Phthisical predisposition, which proclaimed itself by emaciation, loss of strength, and hectic. She then got pulmonary inflammation, tubercles became deposited, and the local symptoms developed themselves. But hear M. Louis's remarks upon this case :—

" The course of the disease in this case presented
" two distinct periods. One of these was marked by
" fever without cough ; in the other, the febrile action
" was accompanied with cough and expectoration. Did
" Phthisis exist during the first of these periods, or set
" in only with the second ? If the post-mortem exami-
" nation had disclosed any serious and old-standing
" lesion in any other organ than the lungs, to it the
" symptoms of the first period might have been
" ascribed. But such was not the case : no morbid
" change of the kind was detected except in the lungs ;
" so that to these organs we must ascribe the fever
" unattended with cough of the first period, as well as
" the fever with cough of the second, and the more so,
" as its characters were the same in both. And as the

“ fever was not preceded by pulmonary catarrh, the
“ case before us justifies the conclusion, that tubercles
“ may be developed in the lungs independently of pul-
“ monary catarrh, and once developed, exist for a long
“ time in the latent state, that is, without exciting
“ cough or expectoration.”

Here, because M. Louis cannot conceive the existence of emaciation and hectic fever without some local cause, he takes it for granted, that tubercles must be developed in the lungs a full year before there is the slightest local symptom of pulmonary disease. How does he reconcile this with the belief, that tubercles act as foreign bodies? Why should the existence of tubercles in this case be perfectly latent, and yet in other instances give rise to the exceedingly acute symptoms which he elsewhere describes? But the whole doctrine is so fraught with contradictions, that once the true order of the phenomena become presented to the mind, an elaborate refutation of the non-inflammatory theory appears absolutely supererogatory.

M. Louis's argument as to the rarity of tubercle in emphysema falls to the ground, when we understand the actual influence of dilated air-cells on the causes of this secretion. But at the same time it may be remarked, that ten cases of tubercle in forty-two of emphysema, is no small proportion.

To conclude what I have to say on this subject, it appears that the arguments employed by M. Louis for the purpose of proving the non-inflammatory origin of tubercles, are either

1st—Beside the question ; for they shew that certain inflammations are not commonly followed by tubercular deposition ; but they fall short of proving that tubercle is a product of a peculiar inflammation.

2d—That other arguments used by him, simply prove that tuberculization differs from plastic or suppurative inflammation ; but do not demonstrate that it is not a peculiar form of inflammation.

3d—That his cases of acute Phthisis, instead of being so many evidences of the non-inflammatory origin of tubercles, furnish, on the contrary, a strong argument in favour of their inflammatory source.

4th—That his cases of latent Phthisis are totally inexplicable on his own views, while they are perfectly in accordance with the doctrines developed in this work.

ON PHTHISICAL PREDISPOSITION.

The views which I entertain as to the nature and origin of tubercular cachexia, are sufficiently indicated in the preceding lectures, and they need not be repeated here. There are, however, some points related to this diseased condition, that I wish to consider in connexion with the opinions of contemporary authors.

Sir James Clarke has written more sensibly and more energetically on this subject than any one else. His views, in many respects, are nearly identical with my own. Thus, the opinions he entertains with regard to the causes of tubercular cachexia, are, in many respects, similar to those contained in this work ; and although he does not consider the exciting cause of

tubercles to be invariably a peculiar inflammation, he thinks, that inflammation may in some cases be their immediate cause. There is, however, one doctrine very generally entertained in the profession, and prominently put forward by this excellent physician, to which I cannot subscribe, inasmuch as it seems to require for its admission, a more accurate series of observations than have hitherto been devoted to it. The doctrine I allude to, is that of the identity of tuberculous cachexia and scrofula.

“The terms *scrofulous* and *strumous*,” says Sir James Clarke, “when strictly applied, have the same import as *tuberculous*.” And in agreement with this sentiment, he gives the following description of the tuberculous diathesis in its hereditary form.

“The countenance,” he says, “generally affords strong indications of the presence of this affection. In early childhood it has a pale, pasty appearance ; the cheeks are generally full, and the upper lip and nose tumid. If the complexion be dark, the colour of the skin is generally sallow ; if fair, it has an unnatural white appearance, resembling blanched wax, rather than healthy integument ; and the veins are large and conspicuous. At a more advanced period of youth, the character of the constitution is still more clearly indicated by the countenance. The eyes, particularly the pupils, are generally large, the eye-lashes long ; and there is usually a placid expression, often great beauty of countenance, especially in persons of a fair, florid complexion. On the other hand,

“ in those of a dark complexion, the features are
“ generally less regular, and the skin is commonly
“ coarse, and of a sallow dingy hue ; although there
“ are many exceptions to this, in the fine dark eye,
“ regular features, and delicate skin of such persons.
“ But it is far more easy to distinguish, than to
“ describe with accuracy the tuberculous physiognomy,
“ as it varies in every intermediate shade, between the
“ pale, faded, but changing colour of persons little
“ under the influence of this morbid condition, and the
“ peculiar permanent sallow cast of countenance which
“ attends the confirmed cachectic state.

“ In early infancy there is little remarkable in the
“ form of the body ; it is generally large, but has not
“ the firmness of health. As the child increases in
“ age, we find that the different parts are not well
“ proportioned, and there is a want of symmetry in the
“ whole. The head is often large, the trunk small, the
“ abdomen tumid, and the limbs are unshapely, being
“ either large and clumsy, or disproportionately slender,
“ with large joints ; but this is only the case in
“ the more perfect examples of hereditary tuberculous
“ cachexia. The growth of the body is also generally
“ unsteady in its progress ; very often it is slowly and
“ imperfectly developed ; in other cases it is unusually
“ rapid, particularly toward puberty.

“ The physical powers are generally below the usual
“ standard. The limbs, though full, are soft, and have
“ neither the form nor the firmness of health. The
“ circulation is generally feeble, as is indicated by a

“ weak pulse and cold extremities. This state of the
“ circulating system forms, I am disposed to believe, an
“ element in the tuberculous constitution ; at least, I
“ have rarely found it wanting, and regard it as afford-
“ ing an explanation of many of the phenomena of the
“ disease. A full development of the body and great
“ muscular power are not, however, incompatible with
“ a degree of tuberculous cachexia. Several of our
“ celebrated pugilists have died tuberculous. Indepen-
“ dently of their bearing on the present subject, such
“ examples deserve attention, as showing the effect of
“ training in increasing the strength even of the tuber-
“ culous system.”

If the reader can extract from the foregoing passage any definite idea of the general features of tubercular cachexia, it is certainly more than I can do. I have, while perusing it, a dreamy vision of various temperaments—the lymphatic, the bilious, and even the athletic ; there is not one of my acquaintances who does not possess some of the characteristics mentioned ; but why I should consider them as all labouring under tubercular cachexia, I cannot imagine. The fact is, that Sir James was partly influenced by experience, and partly by prejudice, in penning the above description. Experience warned him that he had seen Phthisis attacking every variety of constitution ; while prejudice suggested to him, that struma being, according to common opinion, identical with tubercular disease, he should mix its acknowledged phenomena as elements of the picture. But is there any sufficient evidence

that scrofula is identical with the Phthisical diathesis? I think not, and am inclined to regard these states of the constitution as totally independent of each other, for the following reasons :—

1st—I see every day numerous examples of phlyctenular ophthalmia, prurigo, rickets, &c., diseases confessedly peculiar to scrofulous children. I am frequently called on to prescribe for lymphatic-looking infants, with tumid upper lips, dilated pupils, swollen bellies, and enlarged cervical glands ; but upon inquiring as to the diseases to which their parents and other relations have been liable, I do not find that consumption or decline is mentioned more frequently than among any other class of cases. I have known many large families, the members of which, have been all more or less subject to scrofula in one form or another, and none of them had ever got Phthisis.

2ndly—Upon inquiring into the early history of numerous Phthisical patients, I have remarkably seldom met with persons who at any time presented the characteristics of struma. Nay, in one remarkable instance, when, out of a family of eighteen members, fourteen died of Phthisis Pulmonalis, not one ever presented a symptom of scrofula, unless acute hydrocephalus in one child could be considered as such.

Beer has distinguished between the scrofulous and Phthisical diathesis with his usual acumen. And Mackenzie remarks, that “ it requires but little experience
“ of scrofulous diseases to observe, that those indivi-
“ duals whose texture throughout is extremely lax,

“ who have the nose and upper lip almost constantly
“ swollen and scurfy, the abdomen uncommonly dis-
“ tended, and who are affected so frequently with
“ chronic swellings of the lymphatic glands, form a
“ sub-class sufficiently distinct from the general sub-
“ jects of tubercles in the lungs. The latter are lively
“ and irritable, and are rarely affected with the exter-
“ nal lymphatic swellings, the crusta lactea, tinea
“ capitis, opthalmia tarsi, running from the ears and
“ diseased joints, to which the former sub-class are so
“ liable.”

Sir James Clarke regards a feeble circulation as a strong mark of tubercular cachexia. This is certainly true ; but the feebleness displays itself in the Phthisical by extreme frequency of pulse, while it appears to me, that scrofulous individuals have usually a slow pulse. I may here remark, that disease of the brain sometimes modifies the character of the pulse in Phthisis, causing it to become very unfrequent. I have mentioned in the foregoing lectures, that it occasionally occurs, that the Phthisical diathesis displays itself in a slow pulse with increasing embonpoint. A remarkable example of this variety lately presented itself in the practice of a medical friend, in which the patient gradually increased in fatness, at the same time that she grew more and more feeble, until a very short period before death, although constantly labouring under most profuse perspirations.

For the reasons which I have mentioned, I think it very doubtful whether the characteristics of ordinary

scrofula can be considered evidences of the existence of a Phthisical predisposition.

HÆMOPTYSIS A CAUSE OF PHTHISIS.

M. Louis is very much opposed to the doctrine, that hæmoptysis ever produces Phthisis. He says in page 505 of his late work—"Hæmoptysis was long considered an exciting cause of Phthisis ; and M. Fournet, in an extensive work recently published, adopts the obsolete notion. But it is impossible to discover the foundation upon which this writer bases it ; for no proposition is at the present day more satisfactorily proved, in the opinion of all accurate observers, than the extreme rarity of hæmoptysis of any amount, unless as a dependence upon tubercles ; so that, admitting *argumenti gratia* that attacks of hæmoptysis of this kind, are sometimes the exciting cause of a deposition of tubercles, the fact could not be proved. It is impossible, then, in the existing state of things to regard hæmoptysis, either of considerable or trifling amount, as a cause of tubercles."

Suppose we reverse this method of argumentation, and say that nothing is more distinctly capable of proof, than that the presence of a dead secretion in an organ, could not by possibility give rise to a copious hæmoptysis ; whereas the operation of a disordered function might readily give origin to the dead secretion ; and that even if we admitted, that tubercle might give rise to hæmoptysis, the fact could not be proved. I very much doubt if this dogmatical way of

settling the question would tend to much practical utility.

The question is one of vast practical importance. It involves the consideration of whether we are to put into operation every known means of arresting hæmorrhage, cheered with the hope of being enabled to ward off the tubercular deposition ; or whether we are to feel depressed with the conviction, that the seeds of decay have been already sown.

M. Louis's argument comes to this, that because in the majority of cases of profuse hæmoptysis, the patients have ultimately become Phthisical, we are, therefore, to consider tubercles to have been the cause of hæmorrhage ; although it may have occurred in a person previously healthy, and who had not as yet presented either rational symptoms or physical signs of pulmonary disease.

M. Louis himself acknowledges, that this is frequently the case. He says (p. 167), " Either in its
" severe or slight form, hæmoptysis sometimes occurred
" a variable time before the appearance of cough or
" expectoration. Such was the case with twelve of
" my patients (out of fifty-seven) eight of whom had
" had severe hæmoptysis. This form set in still more
" frequently than the other, in course of, or at the
" commencement of the first period of the disease, in
" the proportion of 9 : 7. Spitting of blood occurred
" but rarely towards the close of life, when the patient's
" feebleness had reached its maximum." With these observations I perfectly agree ; and I cannot but

thank M. Louis for the candour and truthfulness of his observations, at the same time that I am often compelled to differ from his conclusions.

SYMPTOMS PRODUCED BY INDURATION OF THE LUNG.

As I am not aware that any one has taken precisely the same view of the part which induration of the lungy substance performs in the production of many of the symptoms of Phthisis, I think it desirable, for the justification of my opinions, to quote the following case from M. Andral's *Clinique Medicale*, tom. iii. p. 236 :—

“Un homme de quarante-neuf ans, ayant quitte le service militaire en 1815, a toujours ete valetudinaire depuis cette epoque. Jusqu'en 1819 il ne s'alita point ; le catarrhe pulmonaire chronique dont il etait atteint, et qui s'exasperait par intervalles, ne l'empechait pas de se livrer au travail. Mais, a dater de la fin de 1819 le catarrhe devint plus intense et plus fatigant ; d'abondantes hemoptysies survinrent par intervalles ; la respiration devint habituellement genee ; les forces se perdirent ; la diarrhee se montra et cessa a plusieurs reprises. Ce malade, dans le cours de ses deux dernieres annees, entra plusieurs fois a la Charite et en sortit chaque fois un peu soulage. Il y entra pour la derniere fois vers le milieu du mois de Septembre 1822, Il etait alors parvenu au plus haut degre du marasme et de la faiblesse ; la toux etait frequente, la dyspnee considerable ; le decubitus horizontal ne pouvait etre garde. La poitrine percutee

rendait un son un peu mat dans le plus grande partie du cote gauche. A gauche en arriere, l'on entendait plusieurs varietes du rale bronchique humide. En plusieurs points la voix resonnait avec force ; cette resonance etait surtout tres-marquee dans la fosse sus-epineuse ; a droite, l'on entendait encore un peu de rale mele au bruit naturel de la respiration. Les crachats etaient formes d'un mucus epais, verdatre, homogene. Le malade n'avait jamais de sueur. Son pouls etait frequent ; une abondante diarrhee l'epuisait. Les jours suivans, l'affaiblissement fit de rapides progres, le jambes s'œdematierent, une fluctuation obscure se fit sentir dans l'abdomen ; le malade expira sans agonie.

“ *Ouverture du cadavre.*—Le cœur, bien proportionne, contenait un caillot fibrineux blanc dans ses cavites gauches.

“ Le tissu du poumon droit etait transforme a son sommet en una substance d'un noir fonce et tres-dure. Une substance semblable etait disseminee sous forme de petites masses isolees dans plusieurs autres points du poumon ; dans leur intervalle, une grande quantite de mucosite sanguinolente engouait le poumon.

“ Le poumon gauche dans toute son etendue avait cesse d'etre permeable a l'air. Son tissu, tres-dur, presentait partout un melange de couleur noire et grise. Dans toute sa peripherie, non loin de la surface exterieure, existaient de petites cavites qui auraient pu admettre une noisette ; toutes communiquaient avec un tuyau bronchique presque capillaire ; la membrane de

l'intérieur des bronches se continuait sur les parois de ces cavités, il nous fut des-lors démontré qu'elles étaient formées par les dernières ramifications bronchiques dilatées et terminées en cul-de-sac. Tout-à-fait au sommet du poulmon existait une cavité semblable, mais plus vaste qu'aucune des autres. C'est en ce point que le retentissement de la voix avait été surtout très-remarquable. La muqueuse des bronches était d'un rouge intense. Des adhérences intimes unissaient le poulmon gauche aux côtes.

“ *Abdomen.*—La surface interne de l'estomac était blanche et sa muqueuse saine.

“ Les quatre cinquièmes supérieurs de l'intestin grêle ne présenterent rien de remarquable. Quatre ou cinq ulcérations, à bord inégal et peu élevé, à fond brunâtre, existaient dans le cinquième inférieur. Dans leur intervalle la muqueuse était blanche. La surface interne du colon descendant, de l'S iliaque et du rectum, était vivement injectée et tapissée par une matière comme purulente.

“ Le foie, de volume ordinaire, présentait soit à sa surface extérieure, soit à son intérieur, un tissu d'un blanc jaunâtre, disposé sous forme de plaques et de lignes sinueuses, dans l'intervalle desquelles apparaissait, comme resserré dans le plus petit espace possible, le tissu rouge ordinaire du foie.

“ Le rate avait une densité remarquable et une pesanteur spécifique beaucoup plus grande que celle d'aucun autre organe. Son tissu, d'une belle couleur rouge-vermeil parfaitement uniforme, présentait une coupe

lisse, qui rappelait entierement l'aspect d'un jambon, ou bien encore de certain muscles epais qui sont deja exposes depuis quelque temps au contact d'un air froid. Dechire il avait encore un aspect tout-a-fait identique avec celui d'un muscle dont on aurait egalement dechire les fibres.

“Une petite quantite de serosite etait epanchee dans le peritoine.”

THE END.

